

19

**WORK PLAN
PHASE II ENVIRONMENTAL SITE
ASSESSMENT
Coos Bay Brownfield Project**

**Front Street Urban Renewal and Development Project—
Waterfront Heritage District**

May 2001

Prepared for:
CITY OF COOS BAY
500 Central Avenue
Coos Bay, Oregon 97420

Prepared by:
URS
111 S.W. Columbia, Suite 900
Portland, Oregon 97201-5814
52-00082004.00

USEPA SF



1398679

Susan Morales

To: Bruce Woods/R10/USEPA/US,

06/12/2001 04:46 PM

cc:

cc:

Subject: Passing muster QA for Coos Bay Brownfield Pilot

attach
to work
plan

Bruce,

You remember the midnight trip to Coos Bay the round about foggy way?

Well the time has come where they are looking at doing Phase II assessments at 12 of the original 30 sites.

They (their consultant URS) submitted a "workplan" that is supposed to serve a couple of purposes, one being to serve as a document for obtaining samples, i.e. a quality assurance plan.

As a complete non-Expert in QAPPS, I was comparing their document against the guidance and I found a couple of pieces missing such as the title and approval sheet. In talking with Jeff Wallace of URS, they explained that they were developing a document that matched the effort; for example, only four grab samples at a couple of sites vs a full superfund type QAPP.

They are trying to accomplish a lot with the funds received, but I'm thinking they need to provide more info, but how much more is the question. This may be clouded given my limited understanding on qapps, I may be misunderstanding where there may be some flexibility.

So, I need your opinion on if this document comes close to passing muster or if they should stick more strictly to the guidance document.

I will try and catch you in person to drop off the document. They do have your number and might be calling you in a few days

Their contact is Jeff Wallace, URS at 503-948-7242.

Thanks for you help. Susan x7299

13 JUNE 2001

- talked w/ Bruce

He said again
same requirements
apply regardless of
how simple or complex
follow format.

- Called Karen Turner

- Informed her this document needs
to be in the format - it is a
requirement and is same as the
one before behind the door.
Would be a need on Spore event.

- ~~She~~ She said she'd call URS and
check in.

URS Corporation (URS) prepared this Work Plan on behalf of the City of Coos Bay to conduct Phase II Environmental Site Assessments (Phase II ESAs) in the City of Coos Bay, Coos County, Oregon. The Phase II ESAs may be conducted as part of the City of Coos Bay Brownfield Development Pilot Project for the Front Street Urban Renewal and Redevelopment Project - Waterfront Heritage District. This Work Plan was prepared in general accordance with U.S. Environmental Protection Agency (EPA) documents entitled *Requirements for Quality Management Plans* (March 2001), *Requirements for Quality Assurance Project Plans* (March 2001), and *Guidance on Preparation of Standard Operating Procedures* (March 2001).

Twenty-four separate Phase I Environmental Site Assessments (Phase I ESAs) were completed during calendar year 2000. Two Phase I ESAs were completed during the first quarter of calendar year 2001. The properties evaluated included both public and private properties within an area of approximately 15 acres in downtown Coos Bay. Each Phase I ESA report summarized the Phase I assessment methods and findings and identified any Recognized Environmental Conditions (RECs). On-site or off-site RECs were identified at 22 sites. The individual who owns three of the sites has opted to conduct Phase II ESA activities on his own. RECs for three additional sites no longer appear to exist, as indicated by information made available since the Phase I ESA reports were issued. Three sites had off-site RECs only, and Phase II ESAs were not recommended for these sites. Two of the sites were combined into one site. Therefore, this work plan considers Phase II ESAs at a total of 12 sites.

The recommended 12 Phase II ESAs will address the RECs identified in the respective Phase I ESAs. As described in the *Draft Work Plan, Phase I Environmental Site Assessments* report (URS, February 2000), properties were prioritized for follow-up Phase II assessments based on the RECs identified in the Phase I ESAs. The Phase II priority rankings are summarized in tables in the Sampling and Analysis Plan (SAP). Tasks to be completed for the Phase II ESAs, as described in the SAP, were developed in consultation with representatives of the City of Coos Bay.

This Work Plan has two major components: Part I – SAP and Part II – Health and Safety Plan (HSP). The SAP presents the detailed scope of work associated with field activities (e.g., sample types and sample locations) and specifies the procedures for sampling and other field operations. The HSP describes the guidelines and requirements for URS personnel during execution of the Phase II ESAs. The HSP identifies potential site hazards, project personnel and their responsibilities, and describes safety procedures and equipment to be utilized. The purpose of the Work Plan is to establish procedures that will produce high quality data to assess possible environmental contamination. This Work Plan provides the protocols for collecting samples, measuring and managing data, documenting field and laboratory data, and establishing worker safety.

DRAFT

**SAMPLING AND ANALYSIS
PLAN
PART I OF THE WORK PLAN
PHASE II ENVIRONMENTAL SITE
ASSESSMENT
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LIST OF ABBREVIATIONS

AST	above-ground storage tank
bgs	below ground surface
COC	Chain-of-Custody
DEQ	Oregon Department of Environmental Quality
EDR	Environmental Database Resources, Inc.
EPA	U.S. Environmental Protection Agency
GPS	global-positioning system
FID	flame ionization detector
IDW	investigation derived waste
LUST	leaking underground storage tank
mg/kg	milligrams per kilogram
msl	mean sea level
OVA	organic vapor analyzer
PAH	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
Phase I ESA	Phase I Environmental Site Assessment
Phase II ESA	Phase II Environmental Site Assessment
PID	photoionization detector
PPE	personal protective equipment
QA/QC	quality assurance and quality control
REC	Recognized Environmental Conditions
RCRA	Resource Conservation Recovery Act
SAP	Sampling and Analysis Plan
SOPs	standard operating procedures
SVOCs	semivolatile organic compounds
TPT	tributyltin
URS	URS Corporation
USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds
µg/L	micrograms per liter

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

URS prepared this SAP on behalf of the City of Coos Bay to conduct Phase II ESAs in the City of Coos Bay, Coos County, Oregon. These Phase II ESAs will be conducted as part of the City of Coos Bay Brownfield Development Pilot Project for the Front Street Urban Renewal and Redevelopment Project - Waterfront Heritage District.

The recommended Phase II ESAs address the RECs and findings presented in the Phase I ESAs conducted by URS for the City of Coos Bay. As described in the *Draft Work Plan, Phase I Environmental Site Assessments* report prepared by URS for the City of Coos Bay (February 2000), a Phase II prioritization system was developed to rank individual properties for potential follow-up investigation. The prioritization system ranks the sites based on the potential for on-site contamination, as inferred from the Phase I ESAs. The ranking matrix summarizes the findings of the Phase I ESAs and categorizes each site as either a High, Medium, or Low Priority. The High, Medium, and Low Priority sites are listed in Table 1-1, Table 1-2, and Table 1-3, respectively. The properties listed in the tables are ranked from highest to lowest threat of environmental impacts from the RECs identified in their respective Phase I ESA.

This SAP is to be used in conjunction with the HSP. The SAP presents the detailed scope of work associated with field activities (e.g., sample types and sample locations) and specifies the procedures for sampling and other field operations. The HSP describes the guidelines and requirements for URS personnel while conducting the Phase II ESAs. The HSP identifies potential site hazards, project personnel and their responsibilities, and describes safety procedures and equipment.

1.2 SITE HISTORY AND CONTAMINANTS

The recommended Phase II ESAs are part of the City of Coos Bay's Brownfield Development Pilot Project. The project area is located within the City of Coos Bay (Figure 1-1) and has historically been developed for various light industrial and commercial uses since the late 1800's. Property use has historically been related to wood products, fishing, machining, and shipping industries. Several sites within the Waterfront Heritage District are identified in the Oregon Department of Environmental Quality (DEQ) databases as having RECs or historical RECs.

An inventory of the properties planned for Phase II ESAs is included in the ranking matrix. The history of each site and the potential contaminants present at the site is summarized in Section 3.0. The location of each Phase II ESA property is included in the Summary Report (Appendix A).

TABLE 1-1
HIGH PRIORITY SITES

Site ID#	Property Name	Address	Current Use	Recognized Environmental Conditions
23 TL3100	Marshfield Corp.	891 N. Front Street	Scrapyard	<u>On Site:</u> Metal recycling operations conducted on site currently and historically may have created subsurface contamination. <u>Off Site:</u> None
7 TL700	Koontz Machine & Welding, Inc. North	680 N. Front Street	Machine shop	<u>On Site:</u> Evidence of past on-site disposal of metal shavings from machining work and metal parts and debris was indicated through interviews and observation. The wastes were disposed of beneath the shop on the tidal flat or in Coos Bay. Rust staining observed on asphalt pavement adjacent to dumpsters used to store metal shavings on adjoining Koontz property to the south. <u>Off Site:</u> None
6 TL800	Koontz Machine & Welding, Inc. South	600 N. Front Street	Machine shop	<u>On Site:</u> Potential soil and groundwater contamination. The property has been occupied by a machine shop for approximately 30 years. Rust staining observed on asphalt pavement adjacent to dumpsters used to store metal shavings. Surface water at this location likely flows to the north beneath the adjoining Koontz building and into Coos Bay. <u>Off-Site:</u> None
8 / 9 TL600 TL500	Coos Bay Towboat Co. Office / Parking Lot	686 N. Front Street / 690 N. Front Street	Office and warehouse	<u>On Site:</u> The office property has been occupied by a machine shop, steel fabricating facility, or other industrial operation for approximately 50 years. Motor or lubricating oils or other petroleum products have probably been used on site. Potential metals contamination to soil at the office and parking lot properties exists from apparent on site disposal of various rusted metallic items, metal slag, and plastic battery casings located on tidal mudflat and along the shoreline. <u>Off Site:</u> Adjoining leaking underground storage tank (LUST) Site – New Horizon Trading Company.
11 TL100	Coos Bay Iron Works	896 N. Front Street	Machine shop	<u>On Site:</u> The subject property has been occupied by a machine shop for over a century. Metal shavings from machining work and metal parts and debris were observed on the tidal flat at the rear of the shop building. <u>Off Site:</u> Contaminated sandblast grit on subject property from adjoining Hillstrom's Shipyard site.
12 TL200	Central Dock Co.	1100 N. Front Street	Office	<u>On Site:</u> Subject property identified as a LUST site. Remediation has been completed, and No Further Action letter issued by DEQ on April 13, 1999. <u>Off Site:</u> Possible on-site contamination related to former sandblasting operations on the adjoining Hillstrom's Shipyard site.
10 TL200	Sweet Trucking Co.	820 N. Front Street	Truck maintenance & storage	<u>On Site:</u> Petroleum staining observed on concrete flooring. Various drums and containers observed in the shop building. Various rusted metallic items, metal slag piles, and plastic battery casings were observed on a rocky shelf beneath the property. <u>Off Site:</u> Adjoining LUST Site – New Horizon Trading Company.

TABLE 1-2
MEDIUM PRIORITY SITES

Site ID#	Property Name	Address	Current Use	Recognized Environmental Conditions
18 TL2500	Powers Building	737 N. Front Street	Warehouse	<p><u>On Site:</u> The subject property is identified as a LUST site in the DEQ database. A UST was decommissioned by removal at the property in 1999. Soil and groundwater at the site have not been tested. DEQ listed the site as a LUST site based on a verbal report by the property owner describing contamination in the excavation.</p> <p><u>Off Site:</u> Adjoining Marshfield Bargain House work yard.</p>
17 TL2100	City of Coos Bay Pump Station	690 N. Front Street	Sanitary sewer pump station	<p><u>On Site:</u> A 1,500-gallon capacity diesel fuel UST formerly located at the northeast corner of the subject property was decommissioned by removal in May 1988. Soil or groundwater samples were not collected or analyzed at the time of decommissioning.</p> <p><u>Off Site:</u> Adjoining LUST Site – New Horizon Trading Company.</p>
20 TL2800	Marshfield Bargain House	790 N. Bayshore Drive	Workyard	<p><u>On Site:</u> Stained soil near drums of waste oil.</p> <p><u>Off Site:</u> A scrapyard adjoins the property to the east. Adjoining LUST site – New Horizon Trading Company.</p>

TABLE 1-3
LOW PRIORITY SITES

Site ID#	Property Name	Address	Current Use	Recognized Environmental Conditions
26 TL500	(b) (6)	925 N. Front Street	Cold storage and ice making	<p><u>On Site:</u> A drywell was observed on the subject property. Drains located in an ice production room and near on site condenser units reportedly drain excess water to the dry well. No spills of freon or other hazardous substances to the drain system or dry wells are known to have occurred. However, dry wells are recognized as a common source of subsurface contamination.</p> <p><u>Off Site:</u> None</p>
1 TL1401	Sause Bros. Ocean Towing	310 N. Front Street	Tugboat business & shop	<p><u>On Site:</u> Equipment maintenance and repair conducted in warehouse indicates potential for soil and groundwater contamination.</p> <p><u>Off Site:</u> None</p>

2.0 SITE DESCRIPTION

2.1 LOCATION AND TOPOGRAPHY

The Waterfront Heritage District covers an area of approximately 15 acres in downtown Coos Bay, Oregon. The Phase II ESA properties are located between North Bayshore Drive (to the west), Coos Bay (to the east), Fir Avenue (to the north), and Market Avenue (to the South). The properties are in an area used for commercial and light industrial purposes. Several of the properties have frontage along the shore of Coos Bay (see Figure 1-1).

Generally, the subject properties are geographically located in the western portion of Section 26, Township 25 South, Range 13 West, Willamette Meridian. The topography of the subject properties is relatively flat, with a slight slope towards Coos Bay. The elevation of the properties is approximately 15 feet above mean sea level (msl), as shown on the Coos Bay, Oregon Quadrangle, 7.5 Minute Topographic Series, United States Geological Survey (1971, photorevised 1975).

2.2 SURFACE WATER CHARACTERISTICS

Most of the properties are covered by either buildings, pavement, soil, or vegetation. Stormwater appears to infiltrate directly to the ground surface in vegetated areas, flow as surface runoff to the adjacent city streets, or flow eastward towards Coos Bay. Surface water along city streets appears to drain to the City of Coos Bay storm sewer system via in-street storm drains. The storm sewer discharges to Coos Bay. The closest surface water body to the properties is Coos Bay.

2.3 SOILS

Generally, native soil beneath the subject properties is mapped as Udorthents. This level soil is typically found on flood plains, marshes, and tidal flats along major streams, estuaries, or bays. The areas have typically been filled and leveled for commercial or industrial use (Haagen, 1989).

The soil mapping unit consists of sandy, silty, or clayey native soils or dredge spoils, wood chips, and dune sand placed along marsh and tidal flats. Permeability, runoff characteristics, and erosion hazards vary by location and composition of the soil (Haagen, 1989). The subject properties are underlain by surficial fill and spoils, sand, silt, gravel, sawdust, wood chips or dredge spoils placed in wetland areas or slopes for disposal or to create developable land.

2.4 GEOLOGY

The subject properties are situated on the western edge of the Coast Range Mountains of Oregon, a long narrow belt of moderately high mountains and coastal headlands. Locally, the subject properties are situated within the Coos Basin, a structural sub-basin of the Coast Range physiographic province (Orr, et. al., 1992).

The native soil, fill, and spoils at the sites are likely underlain by an upper member of the Coaledo Formation, a coarse to fine grained, hard, deltaic sandstone with interbedded siltstones and locally interbedded conglomerate and coal beds. The unit may be greater than 500 feet thick beneath the subject properties.

2.5 HYDROGEOLOGY

Shallow groundwater is expected between 5 and 10 feet below the ground surface in the area of the subject properties. However, the depth to groundwater can vary with the tidal influence of Coos Bay and seasonally with precipitation. Groundwater probably flows generally to the west, discharging into Coos Bay.

3.0 SAMPLING OBJECTIVES AND SITE SUMMARY

3.1 SAMPLING OBJECTIVES

The objective of the Phase II ESAs is to collect additional site information to characterize environmental concerns at several individual properties located within the Waterfront Heritage District of the City of Coos Bay. The Phase II ESAs will identify the presence or absence of contamination resulting from the RECs identified by the Phase I ESA for a property. The Phase II ESA will focus on known or potential sources of contamination identified in the Phase I ESA report for each property. Phase I ESA reports were issued previously for individual properties. Site Summary reports for the properties requiring Phase II ESA work are included in Appendix A of this SAP.

3.2 SITE SUMMARY

The scope of work for each individual property varies according to site-specific conditions. The scope of work for individual properties was prepared separately and is included in the respective Site Summary Reports (Appendix A). The Site Summary Report for each property will be used by URS personnel as a guide for soil and groundwater sample collection.

Each Site Summary Report provides the following information:

- **Property Description** – Summarizes the property's historical development, improvements, areas of environmental concern, and other pertinent information.
- **Recognized Environmental Conditions** – Identifies the RECs at the property that will be assessed during the Phase II ESA.
- **Phase II ESA Scope of Work** – Describes the number of samples to be collected, the sample matrices (soil or groundwater), the proposed location of the samples, and the sample analyses.

Specific sampling procedures, sample handling, and field documentation procedures discussed in Section 4.0 of this SAP.

4.0 FIELD ACTIVITIES

The following sections describe details of the sampling methods and procedures for the Phase II ESAs. Standard Operating Procedures (SOPs) for each field activity are also described in this section.

4.1 GEOPROBE® SAMPLING

The following section describes the rationale and procedures for collecting soil and groundwater samples using a direct-push (i.e., Geoprobe®) drill rig.

4.1.1 Rationale

The expected surface and subsurface conditions at several properties suggest that Geoprobe drilling techniques will be suitable for collecting soil and groundwater samples. Sites selected for Geoprobe sampling include sites with surface paving and adequate overhead clearance.

4.1.2 Sample Locations

Sample locations for each property are described in the Site Summary Report included in Appendix A. Before advancing any boring at a property, a private utility locating contractor will confirm each boring location is clear of underground utilities. Soil samples will be collected continuously from the surface to approximately 10-20 feet below the ground surface (bgs). Water will be collected from first occurring groundwater.

4.1.3 Soil Sampling Methods

Soil samples will be collected at 3- or 5-foot intervals during drilling. The soil samples will be classified by the geologist according to the Unified Soil Classification System and according to SOP 1 outlined in Appendix B. Soil samples will be field screened for the presence of volatile organic compounds (VOCs) using a organic vapor analyzer (OVA) (i.e., photoionization detector [PID] or flame ionization detector [FID]). Designated plastic sleeves will be used within the sample probe rod at each probe location during soil sampling to minimize potential for cross contamination between sampling locations.

Visual inspection and field screening with an OVA will be used to screen soil samples for the presence of potential contamination. The OVA will be calibrated according to the manufacturer's instructions and as described in SOP 2.

Samples will be placed in precleaned glass or plastic containers supplied by the contract analytical laboratory. To provide a sample tracking mechanism, each sample collected will be given a sample identification number (see Section 5.3). Immediately after collection, and during shipment to the analytical laboratory, samples will be stored in coolers on ice or an ice-substitute at approximately 4° C. Chain-of-custody procedures will be followed to document the possession of the samples from collection through receipt at the analytical laboratory (see

Section 5.4.3). Non-dedicated sampling equipment used at more than one sampling locations will be decontaminated according to the procedures outlined in SOP 3. Before collecting samples, sampling personnel will don clean, nitrile or equivalent protective gloves.

4.1.4 Groundwater Sampling Methods

Groundwater samples will be collected from temporary well points placed in the borings. Groundwater will be pumped using a low-flow peristaltic pump and dedicated polyethylene tubing. Before collecting groundwater samples, depth-to-water measurements will be made using an electronic water level indicator. Groundwater will then be purged from the temporary well point until it is relatively free of silt. Before sampling, the pH, temperature, and specific conductance of the water will be measured using electronic field measuring equipment. Field measurement procedures are outlined in SOP 4. After collecting field measurements, groundwater samples will be collected using the peristaltic pump.

Samples will be collected in precleaned and certified glass or plastic containers supplied by the contract analytical laboratory. To provide a sample tracking mechanism, each sample collected will be given a sample identification number (see Section 5.3). Groundwater will be transferred from the well point into the appropriate pre-labeled sample bottles using the peristaltic pump and dedicated tubing. VOC samples will be collected first, as they are the most sensitive to volatilization. While filling VOC sample bottles, sample water will be poured down the inside of the container to minimize turbulence while sampling. While filling the sample vial for VOC analysis, a positive meniscus will be formed over the mouth of the vial to eliminate the formation of air bubbles and headspace before capping. Samples collected for dissolved metals analyses will be field filtered with a 0.45 micron disposable filter. Before collecting samples, sampling personnel will don clean nitrile or equivalent protective gloves.

Each sample container will be placed in a resealable bag to reduce the possibility of contaminating other samples if a sample container leaks or breaks. Sample containers will be properly labeled and packaged in a cooler with ice. Each cooler should contain enough ice to maintain the samples at $4^{\circ} \pm 2^{\circ}\text{C}$ during continued sample collection and shipping. Additional ice will be added as needed, but the samples will not be frozen. Chain-of-custody procedures will be followed to document the possession of the samples from collection receipt at the analytical laboratory (see Section 5.4.3). Non-dedicated sampling equipment used at more than one between sampling location will be decontaminated according to the procedures outlined in SOP 3.

4.1.5 Sample Analysis

The soil and groundwater samples collected at a property will be analyzed according to the sample and analysis summary in each Site Summary Report (Appendix A).

Samples collected from several Phase II ESA properties will be analyzed for the presence of petroleum hydrocarbons by the NWTPH-HCID test method. Additional analytical testing may be needed based on the results of NWTPH-HCID analyses. Unless otherwise stated in the

Sample and Analysis Summary tables in Appendix A, URS will contact the City of Coos Bay to recommend conducting additional analyses. Additional parameters that may need to be analyzed for include the quantification of gasoline-range hydrocarbons by the NWTPH-Gx method, the quantification of diesel- and heavy oil-range hydrocarbons by the NWTPH-Dx method, and polynuclear aromatic hydrocarbons.

4.2 HAND AUGER SAMPLING

4.2.1 Rationale

The expected surface and subsurface conditions at several of the properties indicate that hand augering techniques will be suitable for collecting samples. A hand auger will be used to collect soil samples at properties that have no surface paving. Soil samples will be collected from approximately 6 to 12 inches bgs. Groundwater samples will not be collected from the hand-augered boreholes.

4.2.2 Sample Locations

Sample locations for each property are identified in the respective Site Summary Reports in Appendix A. Before hand augering at a property, a private utility locating contractor will confirm each auger location is clear of underground utilities.

4.2.3 Sample Methods

The soil samples will be classified by the geologist according to the Unified Soil Classification System. Soil samples will be field screened for the presence of VOCs using an OVA. Designated plastic sleeves will be used within the auger at each location during soil sampling to minimize the potential for cross contamination between samples.

Visual inspection and field screening with an OVA will be used to screen soil samples for possible contamination. The OVA will be calibrated according to the manufacturer's instructions and as described in SOP 2.

Samples will be placed in precleaned and certified glass or plastic containers supplied by the contract analytical laboratory. Each sample collected will be given a sample identification number (see Section 5.3). Immediately after collection, and during shipment to the analytical laboratory, samples will be stored in coolers on ice or an ice-substitute at approximately 4° C. Chain-of-custody procedures will be followed to document the possession of the samples from collection through receipt by the laboratory (see Section 5.4.3). Non-dedicated sampling equipment used at more than one sampling location will be decontaminated according to the procedures outlined in SOP 3. Sampling personnel will wear clean, nitrile or equivalent protective gloves while collecting and handling samples.

4.2.4 Sample Analysis

The samples collected at a property will be analyzed according to the sample and analysis summary provided in each Site Summary Report (Appendix A).

Samples collected from several Phase II ESA properties will be analyzed for the presence of petroleum hydrocarbons by the NWTPH-HCID test method. Additional analytical testing may be needed based on the results of NWTPH-HCID analyses. Unless otherwise stated in the Sample and Analysis Summary tables in Appendix A, URS will contact the City of Coos Bay to recommend conducting additional analyses. Additional parameters that may need to be analyzed for include the quantification of gasoline-range hydrocarbons by the NWTPH-Gx method, the quantification of diesel- and heavy oil-range hydrocarbons by the NWTPH-Dx method, and polynuclear aromatic hydrocarbons.

4.3 NEAR-SURFACE SOIL SAMPLING

4.3.1 Rationale

Site conditions at several properties suggest that surface grab sampling techniques will be suitable to characterize the potential for soil contamination.

4.3.2 Sample Locations

Sample locations for each property are identified in the respective Site Summary Reports (Appendix A).

4.3.3 Sample Methods

Near-surface grab samples will be collected from within the uppermost 6 inches of soil below the ground surface. Grab samples will not be collected from the surface layer but will be collected from between 2 and 6 inches below the surface. The soil samples will be classified by the geologist according to the Unified Soil Classification System. Soil samples will be field screened for the presence of VOCs using an OVA. Designated plastic sleeves will be used within the auger at each location during soil sampling to minimize the potential for cross contamination between samples. Sampling personnel will wear clean, nitrile or equivalent protective gloves while collecting and handling samples.

Visual inspection and field screening with an OVA will be used to screen soil samples for potential contamination. The OVA will be calibrated according to the manufacturer's instructions and as described in SOP 2.

Samples will be placed in precleaned and certified glass or plastic containers supplied by the contract analytical laboratory. Each sample collected will be given a sample identification number (see Section 5.3). Immediately after collection, and during shipment to the analytical laboratory, samples will be stored in coolers on ice or an ice-substitute at approximately 4° C.

Chain-of-custody procedures will be followed to document the possession of the samples from collection through receipt by the analytical laboratory (see Section 5.4.3). Non-dedicated sampling equipment used at more than one sampling location will be decontaminated according to the procedures outlined in SOP 3.

4.3.4 Sample Analysis

The samples collected at a property will be analyzed according to the sample and analysis summary provided in each Site Summary Report (Appendix A).

Samples collected from several Phase II ESA properties will be analyzed for the presence of petroleum hydrocarbons by the NWTPH-HCID test method. Additional analytical testing may be needed based on the results of NWTPH-HCID analyses. Unless otherwise stated in the Sample and Analysis Summary tables in Appendix A, URS will contact the City of Coos Bay to recommend conducting additional analyses. Additional parameters that may need to be analyzed for include the quantification of gasoline-range hydrocarbons by the NWTPH-Gx method, the quantification of diesel- and heavy oil-range hydrocarbons by the NWTPH-Dx method, and polynuclear aromatic hydrocarbons.

4.4 SITE-SPECIFIC SAMPLING AND ANALYSIS CONTINGENCIES

Site-specific sampling and analysis contingencies were developed to address the following circumstances in the field:

- To streamline Phase II ESAs, the City of Coos Bay will coordinate fieldwork with property owners. Site access should be scheduled so that sampling can occur at more than one site in a scheduled work day. Unforeseen logistical problems related to site access could limit the number of sites visited in a scheduled workday. URS will notify the City of Coos Bay of any delays and assist the City and discuss possible rescheduling.
- Site constraints at several properties prevent the use of a drill rig. Access at these sites may be limited due to the presence of overhead power lines, buildings, or the marshy conditions of the tidal flat along Coos Bay. Where applicable, hand auger techniques will be used in specific locations at these properties. Individual site specific access problems are addressed in Section 3.0. If hand augering is not possible due to surface conditions or other constraints, URS will notify the City of Coos Bay and discuss alternative sampling methods.
- Due to shipping logistics - such as drop off times and locations - it may not be feasible to ship samples to the analytical laboratory the same day that they are collected. If samples cannot be shipped the same day, they will be stored on ice in a cooler and shipped the following day.

5.0 INVESTIGATION DOCUMENTATION

This section describes sample handling and documentation procedures. The procedures are designed to provide a thorough record of the sampling events and provide information for later interpretation of the data.

5.1 FIELD LOGBOOKS

Permanently bound field books with waterproof paper will be used as the field logbooks for this project because of their compact size, durability, and secure page binding. The pages of the logbook will be numbered consecutively and will not be removed for any reason. Entries will be made in blue or black waterproof indelible ink.

Logbooks will document the procedures performed by field personnel. Each entry will be dated, legible, and contain accurate and complete documentation of the individual's activities. Documentation in the field logbook will be at a level of detail sufficient to explain and reconstruct field activities without relying on recollection by the field personnel. Because the logbook is a complete documentation of field procedures, it will contain only facts and observations. Language should be objective, clear, concise, and free of personal interpretation or terminology that might be misconstrued. No erasures will be allowed. If an incorrect entry is made, the information will be crossed out with a single strike mark and the change initialed and dated by the team member making the change.

Field logbooks will be identified by the project name and a project-specific number (e.g., "Coos Bay Phase II ESA, Project Number 5200082004.00") and stored in the field project files when not in use. Field logbooks will be photocopied after the field investigation, and photocopies will be stored in the project files. After field activities are complete, logbooks will be stored in the permanent project file. Separate calibration logbooks will be maintained for each instrument used during the investigation (e.g., OVA).

5.2 PHOTOGRAPHS

Representative photographs will be taken to document the following: (1) identify and document the collection of soil and groundwater samples; (2) identify the location of the samples relative to site features; and (3) to document field activities or field observations.

5.3 SAMPLE NUMBERING SYSTEM

Soil and groundwater samples collected during the Phase II ESA activities will be numbered as follows:

- The first two letters will designate the sample collection method. ("GP" for Geoprobe, "HA" for hand auger, or "GS" for grab sample.)

- The next two, three, or four letters will designate the property from which the sample was collected (e.g., "CBPS" for City of Coos Bay Pump Station or "SBOT" for Sause Brothers Ocean Towing).
- The next two numerals will represent consecutive sample numbers for a given property (e.g., 01, 02, 03).
- The last two letters will designate the sample matrix (SS for soil sample, GW for groundwater sample).

An example of a groundwater sample collected using a direct-push probe rig from the (b) (6) Property would appear as follows: GP-GP01-GW. A hyphen will separate the sample collection method from the property location. A hyphen will also separate the sample number from the sample matrix. No hyphen will separate the property location from the sample number.

5.4. SAMPLE LABELS

Sample containers will be labeled before collecting each sample using a permanent water proof marker. The following information will be recorded on each sample label:

- Site name
- Sampling date
- Sampling time
- Sample identification number
- Preservative used if applicable
- Initials of sampling personnel
- Requested analysis

5.5 FIELD SAMPLING SHEETS

Field sampling sheets used during the investigation include soil boring logs, groundwater sampling forms, and field sampling data sheets. Examples of these forms are presented in Appendix C.

5.6 CHAIN-OF-CUSTODY RECORDS

The primary purpose of Chain-of-Custody (COC) records is to document sample custody and to provide the laboratory with the appropriate analysis request. A separate COC form will accompany each shipping cooler, and contain sample information for only those samples contained in the cooler. URS will retain the sender's copy (last or pink copy) of the COC. This copy will be kept with the project files. Each COC will contain the following information:

- Sample identification number

- Date and time of sampling
- Sample matrix
- Number of sample containers and or volume of sample
- Requested chemical analysis
- Names and signatures of sampling personnel
- Project number
- Any additional notes regarding sample collection or preservation (e.g., field filtered)

Each shipping cooler will be sealed with custody seals. Each custody seal will have the sampler's signature and date. Custody seals will be attached to the left front and right rear side of the cooler in such a manner that they will be broken if the cooler is opened.

5.7 CORRECTIONS TO DOCUMENTATION

If corrections are required to field documentation including field log book, field sampling sheets, development forms, or COC, the correction will be made in the following manner:

- Draw a single line through the incorrect entry.
- The person making the entry will initial and date the correction.

6.0 SAMPLE PACKAGE AND SHIPPING

6.1 PACKAGING

The procedures and material used for sample packaging must adequately protect the sample containers from accidental breakage during shipment. Glass containers will be placed in plastic bags and will be wrapped and cushioned in inert packing material, such as foam or bubble wrap packing material. Plastic samples do not require individual cushioning material, but they should be packed well to minimize movement during transport. Caps will be screwed on tightly, and the containers will be placed into individual, resealable bags, which will then be sealed. Ice or ice-substitute will be placed in the container in a manner to promote adequate and equal cooling for all samples.

If ice is used as the cooling medium it will be packaged in the following manner. Approximately 1/2 bag of cubed ice will be transferred into a 1-gallon resealable plastic bag. The bag will be sealed and placed inside a second resealable plastic bag. The outer bag will be sealed and taped with duct tape to prevent the bag from opening.

6.2 SAMPLE SHIPPING

Sample containers will be placed inside a strong shipping container, such as a metal or plastic picnic cooler with a hard plastic liner. The shipping container will be of sufficient quality to minimize the potential for leaks or spills of ice water or potentially broken sample containers. The drain plug at the bottom of the cooler will be taped shut so that the contents from potential broken containers of prepackaged ice, ice substitute, or sample will not escape. The completed COC (minus the sampler's copy) will be placed inside a resealable plastic bag and secured with duct tape to the inside lid of the cooler. The shipping container lid will be adequately secured with tape to prevent opening during shipping. The shipping container will be adequately cleaned between shipments to prevent potential cross-contamination of samples.

Samples will be shipped from the project site to the project analytical laboratory via overnight courier. Field personnel will transport sample shipments from the field to the appropriate courier office. COC forms do not require the signature of the shipping agent.

When possible, samples will be shipped the same day as collection. Due to the location of the project and time constraints for overnight shipping, some shipments may not be sent until the following day. In such cases, samples will be repacked with fresh ice before shipping.

Samples will only be shipped on Fridays if required by field circumstances and URS has received approval for Saturday delivery from the laboratory.

Soil and groundwater samples will be shipped to the primary laboratory overnight via courier to the following address:

Environmental Services Laboratory, Inc.
17400 SW Upper Boones Ferry Road, Suite 270
Portland, Oregon 97224
Contact: Darwin Thomas (503) 670-8520

7.0 INVESTIGATION-DERIVED WASTES

Investigation-derived wastes (IDW) consists of decontamination water, purge water, or soil cuttings generated during the investigations. Proper storage of wastes is necessary to minimize potential spread of contaminated or potentially contaminated media (e.g., soil, water). The following section describes the procedure for containerizing and storing the IDW accumulated during the Phase II ESA work.

7.1 WASTE STORAGE

Decontamination water, purge water, or soil cuttings generated during Phase II ESA work will be stored on the property where it was generated in removable-head steel 15- or 55-gallon capacity drums complete with lids, lid gaskets, and bolts.

7.2 DRUM LABELING

IDW drums will be labeled on both the side and lid using a permanent-paint marking pen. Labels will have the following information:

- Generator's name (specific property location or owner)
- Project Name (Coos Bay Phase II ESA)
- Name and Telephone number of City of Coos Bay Project Manager: Karen Turner (541) 269-8918
- Description of contents (decontamination water, purge water, or soil cuttings)
- Date
- Drum number of total drums generated at the individual site

The transport and disposal of IDW will be the responsibility of the City of Coos Bay when laboratory results are received. Further characterization of the waste for disposal will not be conducted during this Phase II ESA work. The personal protective equipment (PPE) will be considered a non-hazardous solid waste. Therefore, PPE will be disposed of in the nearest dumpster.

8.0 SAMPLING EQUIPMENT AND FIELD INSTRUMENTATION

Standard Operating Procedures for sampling equipment, field instrument operation and calibration are included in Appendix B.

9.0 REFERENCES

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- Orr, E.L., Orr, W.N., and Baldwin, E.M., 1992, *Geology of Oregon*, 4th Edition, Kendall/Hunt Publishing Company.
- U.S. Environmental Protection Agency, March 2001. *Requirements for Quality Management Plans*.
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- URS. December 2000. "Phase I Environmental Site Assessment, Koontz Machine & Welding South Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Coos Bay Towboat Office Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Coos Bay Towboat Parking Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Coos Bay Iron Works Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Central Dock – Ocean Dock Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Sweet Trucking Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.

- URS. December 2000. "Phase I Environmental Site Assessment, Powers Building Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, City of Coos Bay Sanitary Pump Station Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, (b) (6) Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. December 2000. "Phase I Environmental Site Assessment, Sause Bros. Ocean Towing." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. April 2001. "Phase I Environmental Site Assessment, Marshfield Bargain House Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.
- URS. April 2001. "Phase I Environmental Site Assessment, Marshfield Corporation Property." Coos Bay Brownfield Project, Front Street Urban Renewal and Development Project – Waterfront Heritage District.

PROPERTY DESCRIPTION

The Marshfield Corporation property is an irregular-shaped 0.44-acre parcel (Tax Lot 3100) located at 891 North Front Street. The property contains a 5,000-square-foot storage warehouse and a scrap yard. The scrap yard receives scrap metal that is collected and stored in piles. Refrigerators, sealed canisters, or anything containing hazardous materials are not accepted. The scrap metal materials are dismantled and cut with acetylene torches, sorted, and placed into other piles. According to the property owner, Mr. Schneiderman, this portion of the subject property has been used as a metal scrap yard by his family since 1929. Areas of soil staining were observed in portions of the scrap yard that were not covered with scrap metal.

RECOGNIZED ENVIRONMENTAL CONDITIONS

Although the scrap yard does not accept sealed containers or equipment containing hazardous materials, it is unknown whether metal received at the scrap yard may have been in contact with or coated with petroleum product or hazardous materials. Areas of significantly stained soil were observed in the scrap yard during the Phase I ESA (April 2001). The stained soil indicates the potential for soil or groundwater contamination. Therefore, the stained soil is a REC.

PHASE II ESA SCOPE OF WORK

The objective of the Phase II ESA at the Marshfield Corporation property is to assess the potential for impacts to soil and groundwater from the current and historical metal recycling operations. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Four borings will be advanced at the subject property with the aid of a Geoprobe drilling rig. One soil and one groundwater sample will be collected from each of the borings, for a total of four soil and four groundwater samples. Approximate sample locations are shown on Figure A-1. Continuous soil samples will be visually examined for evidence of staining or odors, and soil samples will be screened in the field for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. Groundwater samples will be collected from the first occurring groundwater.

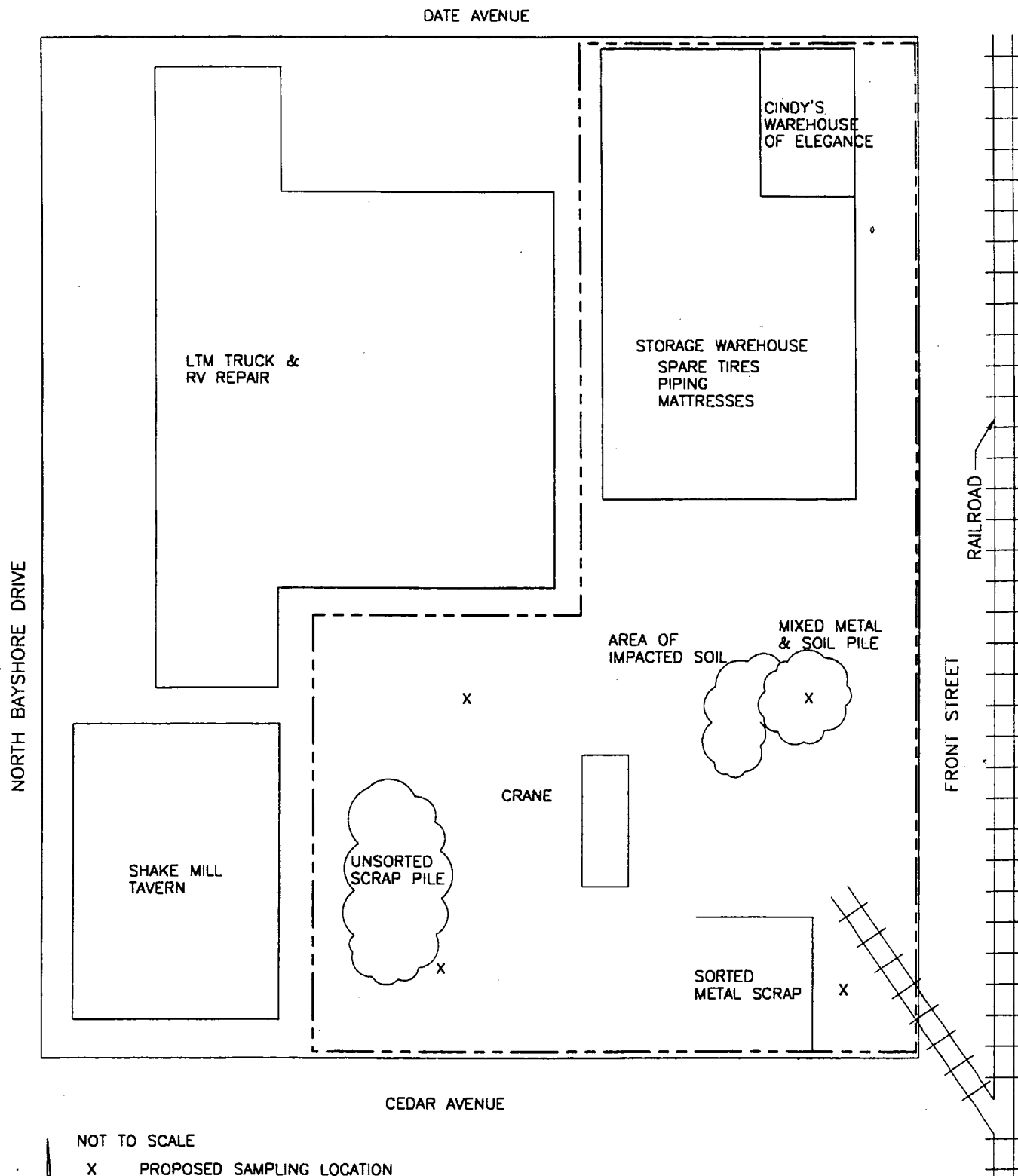
Sample Analysis

Soil samples will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will also be analyzed for Resource Conservation Recovery Act (RCRA) 8 metals and polychlorinated biphenyls (PCBs). If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-1.

TABLE A-1
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	4	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	4	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260



SITE PLAN

City of Coos Bay
Marshfield Corporation Property
Coos Bay, Oregon

MARCH 2001
52-00082004.00

FIGURE-A1

URS

PROPERTY DESCRIPTION

The Koontz Machine & Welding, Incorporated - North property (Koontz North) is located at 680 North Front Street between Alder Avenue and Birch Avenue and consists of an approximately 50 feet by 150 feet parcel (Tax Lot 700). The current owner and manager of the machine shop, Mr. Jim Shaw, said that Koontz Machine & Welding had been operating for nearly 100 years. Koontz Machine & Welding, Inc. also owns the adjoining property to the south of the Koontz North property.

The property is occupied by one on-site building that is partly situated on a wharf that extends east over Coos Bay. The building is used as a machine shop by Koontz Machine & Welding, Inc. The building consists primarily of one room that is used as the machine and welding shop. Metal shavings from machining work and staining were observed on the wooden flooring in various places around the shop. Motor oil, hydraulic oil, and grease used in the machining equipment are stored primarily on the southern adjacent property.

According to a machinist at the Koontz North machine shop, a former practice at the machine shop, before approximately 25 or 30 years ago, involved disposing of metal shavings beneath the machine shop building. Metal shavings were disposed of by cutting a hole in the wood flooring, and dumping the shavings onto the tidal flat or into Coos Bay. It is unknown what quantity of shavings may have been disposed of in this manner, or whether cutting oils or other waste materials were also disposed of on site.

RECOGNIZED ENVIRONMENTAL CONDITIONS

According to the findings and conclusions presented in the Phase I ESA report on the Koontz North property (December 2000), the following three RECs were identified at the property:

- The property has been occupied by a machine shop for nearly a century. Metal shavings from machining work, or metal parts, and debris were reportedly disposed of beneath the shop on the tidal flat or in Coos Bay. It is unknown whether shavings or machine parts may have been contaminated by oil or other fluids associated with the machining process. There is the potential for soil and groundwater beneath the property to have been contaminated by metals or other contaminants.
- Hazardous materials or petroleum products used on the property include motor oil, hydraulic oil, and grease. Only small quantities of water displacing oil and propane appear to be stored on the subject property. The wood flooring of the machine shop was stained in many areas. Stains generally appeared to be weathered, and fresh stains were not observed. However, there is the potential for soil and groundwater beneath the subject property to have been impacted by a historic petroleum leaks or spills.
- Rust staining was observed on asphalt pavement near two dumpsters located on the adjacent Koontz South property to the south of the subject property. The dumpsters are used to store metal shavings from the machine shop. The staining appeared to be to the north, towards

subject property machine shop building. It is likely that surface water runoff at this location flows north beneath the subject property into Coos Bay.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to the machining and welding operations conducted at the Koontz North property. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

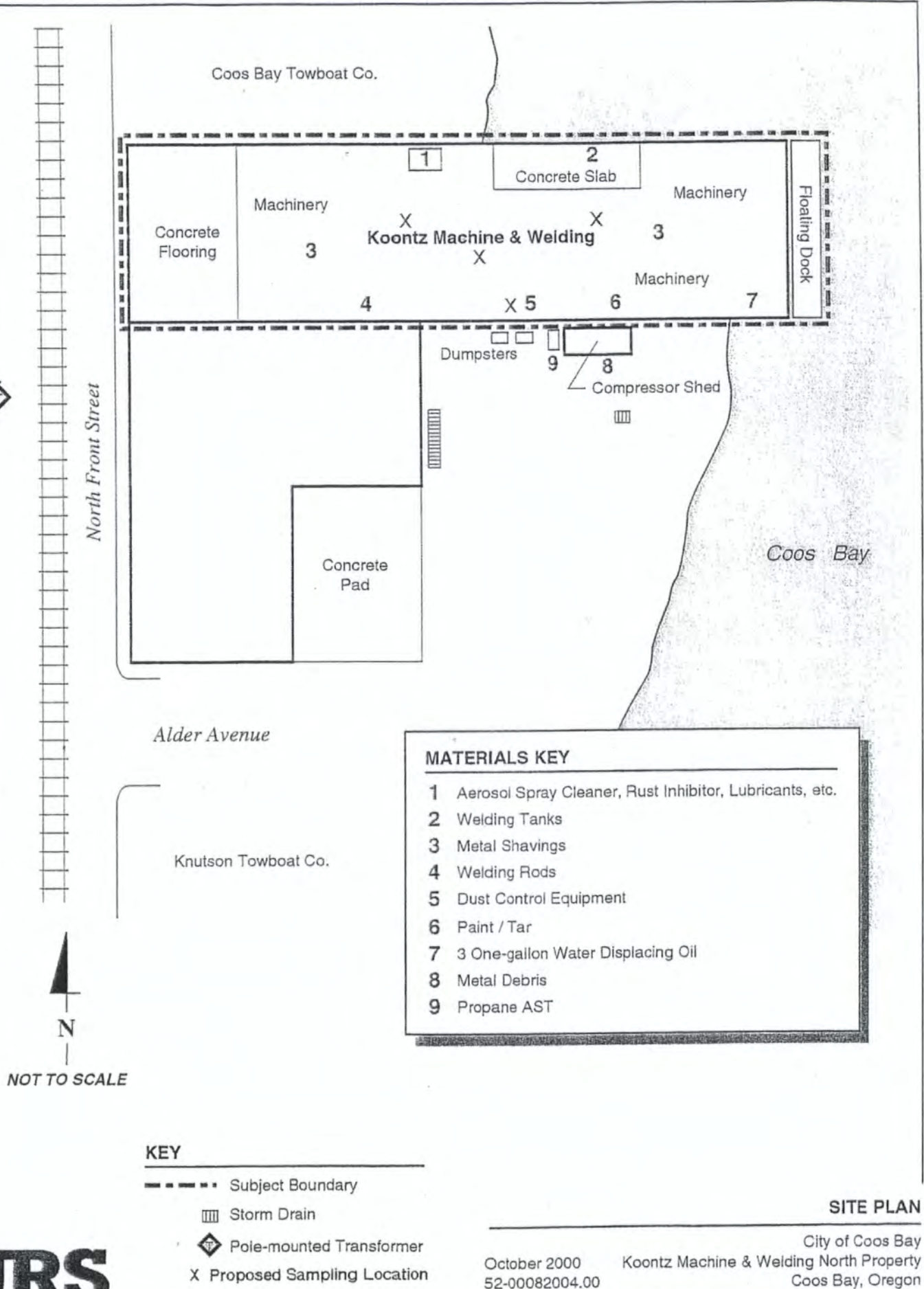
Four soil samples will be collected using a hand auger. Use of the hand auger is contingent on the ability to core or cut through the flooring and the absence of standing water from Coos Bay beneath the building. Approximate sample locations are indicated on Figure A-2. The soil samples will be collected from approximately 6 to 12 inches bgs.

Sample Analysis

Soil samples will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will also be further analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs. Analytical methods for soil and groundwater samples are listed in Table A-2.

TABLE A-2
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	4	Hand Auger	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)



PROPERTY DESCRIPTION

The Koontz Machine & Welding, Incorporated - South property (Koontz South) is located at 600 North Front Street. The property is situated northeast of the intersection of North Front Street and Alder Avenue and consists of an approximately 100 foot by 100 foot parcel (Tax Lot 800). The current owner and manager of the machine shop, Mr. Jim Shaw, said that Koontz Machine & Welding, Inc. had been operating for nearly 100 years. Koontz Machine & Welding, Inc. also owns the adjoining property to the north of the Koontz South property.

The property is occupied by one on-site building, an oil storage trailer, and a paved parking and storage area. A concrete pad for a steam cleaner unit is located outside the east wall of the building, and an oil storage trailer is located at the southern end of the steam cleaner pad. The building is used as a machine and vehicle maintenance shop, parts supply storehouse, and office by Koontz Machine & Welding, Inc. These operations typically involve the use of petroleum products and the production of various metals waste products and debris. Evidence of historical dumping of metal waste or petroleum product on site was not observed during the Phase I ESA. However, the floors of the vehicle maintenance bays were cracked and stained. The soils and fill could not be observed directly because the surface was paved with asphalt. Small areas of staining were observed in the asphalt areas of the property.

A stormwater drain in the paved asphalt area of the property reportedly directs runoff to an outfall in Coos Bay. No chemical analyses of effluent from the outfall are known to have been conducted.

RECOGNIZED ENVIRONMENTAL CONDITIONS

According to the findings and conclusions presented in the Phase I ESA report on the Koontz South property (December 2000), the following two RECs were identified at the property:

- Hazardous materials or petroleum products used on site with the potential to adversely affect environmental conditions at the property include motor and hydraulic oil and grease. Visible stains and stained absorbent material were observed on the cracked concrete flooring of the vehicle maintenance bays near a 55-gallon hydraulic oil drum and a drain valve on a used oil tank.
- Rust staining was observed on asphalt pavement near two dumpsters used to store metal shavings from the machine shop adjacent to the north. The staining appeared to extend to the north, towards the adjacent Koontz machine shop building. It is likely that surface water runoff at this location flows north beneath the building on the Koontz North property and into adjacent Coos Bay.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to current and historic operations at the Koontz South property. Sample locations and

sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Three borings will be advanced at the subject property using a Geoprobe rig. One soil and one groundwater sample will be collected from each of the borings, for a total of three soil and three groundwater samples. Approximate sample locations are indicated on Figure 3-1. Continuous soil samples will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the soil-water interface. Groundwater samples will be collected from the first occurring groundwater.

Sample Analysis

Soil samples will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will also be analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-3.

TABLE A-3
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	3	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	3	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260

Coos Bay Towboat Co.

Koontz Machine & Welding

Compressor Shed

Floating Dock

Forklift

O₂, N₂, Acetylene Tanks

Parts Storage

3

4

5

6

13

7

8

9

10 Concrete Pad

11

12

Office

Oil Storage Trailer
(Motor & Hydraulic Oil)

Piping Storage

Boats

Coos Bay

North Front Street

Alder Avenue

Knutson Towboat Co.



NOT TO SCALE

MATERIALS KEY

- 1 Propane AST
- 2 Metal Debris
- 3 55-gal. Hydraulic Oil Drum/Stained Absorbent
- 4 Waste Bin
- 5 Absorbent Bin
- 6 Oil-stained Absorbent
- 7 Steam Cleaner
- 8 Kerosene AST
- 9 Used Oil AST
- 10 55-gallon Soap Drum
- 11 Oil/Water Separator
- 12 Empty 55-gallon Drums
- 13 Used Oil Release Valve

KEY

- Subject Boundary
- ▨ Storm Drain
- ◊ Pole-mounted Transformer
- X Proposed Sampling Location

SITE PLAN

October 2000
52-00082004.00

Koontz Machine & Welding South Property
Coos Bay, Oregon

City of Coos Bay

URS

FIGURE A3

PROPERTY DESCRIPTION

The Coos Bay Towboat Company (CBTC) property consists of two approximately 100 foot by 50 foot adjacent parcels located along North Front Street. The CBTC office and storehouse building is located southeast of the intersection of North Front Street and Birch Avenue at 686 North Front Street (Tax Lot 600). The second parcel is located adjacent to the north beyond the eastern terminus of Birch Street. The property was reportedly purchased by the CBTC in 1986 from Mr. Jim Ellis and is believed to have been previously owned by the adjoining Koontz Machine & Welding, Inc.

The CBTC office building, covers most of the parcel at 686 North Front Street and is used as an office and parts supply storehouse, sleeping area, and small maintenance shop. The maintenance and storehouse area contains a jointed concrete floor that was observed to be in good condition. An exterior concrete pad with surrounding concrete berm was located adjacent to the office entrance at the eastern end of the property. The site contact said that the pad was formerly used for oil or petroleum storage. A potential former sump was located adjacent to the pad. No major leaks or spills are known to have occurred at this location.

The eastern property boundary is defined by the mean high water line. Tidelands located between the mean high and mean low water marks are owned by the State Division of Lands. The subject property is located on a rocky shelf that may have been formed from imported fill material. A tidal mudflat visible at low tide and the rocky shelf on which the subject property is located exhibited a large amount of debris, including various rusted metal ship and machining parts, metal slag piles, and plastic and ebonite battery casings. Reportedly, battery casings were disposed of on the mudflat by a local scrapyard business after the battery lead was extracted for sale or recycling.

RECOGNIZED ENVIRONMENTAL CONDITIONS**On-Site Recognized Environmental Conditions**

According to the findings and conclusions presented in the Phase I ESA reports on the CBTC property (December 2000), the following two on-site RECs were identified at the property:

- A large amount of debris, including various rusted metal ship parts, metal slag piles, and plastic battery casings, were located on the tidal mudflat visible at low tide and the rocky shelf on which the subject property is located exhibited. These wastes could have contaminated the soil beneath and in the vicinity of the property with metals.
- Historical review of the property suggests that the on-site building at the parcel at 686 North Front Street was previously used as a machine shop. The potential for motor or lubricating oils or other petroleum product to have been used on site is high. However, there was no visible evidence or regulatory agency data indicating potential contamination to soil or groundwater from the machine shop operations.

Although not a REC, a potential sump was located adjacent to a concrete former oil storage pad near the office building entrance. The potential sump consisted of a recessed area of bare earth located beneath a spigot attached to a concrete berm surrounding the pad. Evidence of staining or historic leaks to the pad were not observed. However, leaks or releases of petroleum products could have occurred through the spigot and impacted the sump.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the CBTC property (December 2000), the following off-site REC was identified:

- The Environmental Database Resources, Inc. (EDR) report and subsequent file reviews at the DEQ suggest that one confirmed contaminated site near could have impacted soil or groundwater beneath the subject property. This site, the New Horizon Trading Company, is located adjacent to the northwest corner of the subject property. According to the DEQ LUST incident report and conversations with DEQ personnel, a UST was decommissioned by removal at this site in 1999. The property owner later contacted DEQ and indicated that water had been observed in the tank, and that soil in the UST excavation pit appeared contaminated by petroleum product. Soil and groundwater at the site have not been sampled for analysis. DEQ reported the site as a LUST site based on a verbal report by the property owner, but the DEQ is awaiting further information at this time. Due to the proximity of the site to the subject property and the apparent contamination, there is a potential for soil and groundwater beneath the subject property to have been impacted by this site.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to current and historic operations at the CBTC property and related to off site New Horizon Trading Company LUST listing. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property using a Geoprobe rig. One soil and one groundwater sample will be collected from each of the borings, for a total of two soil and two groundwater samples. A third soil sample will be collected using a hand auger. Approximate sample locations are indicated on Figure 4-1. Continuous soil samples from the borings will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for possible laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. The hand auger soil sample will be collected from

SUMMARY REPORT

Coos Bay Towboat Company Office SITE 8 TL 600 Coos Bay Towboat Company Parking Lot SITE 9 TL 500

approximately six to twelve inches beneath the surface of a remnant metal slag pile at the estimated ground surface. Groundwater samples will be collected from the first occurring groundwater.

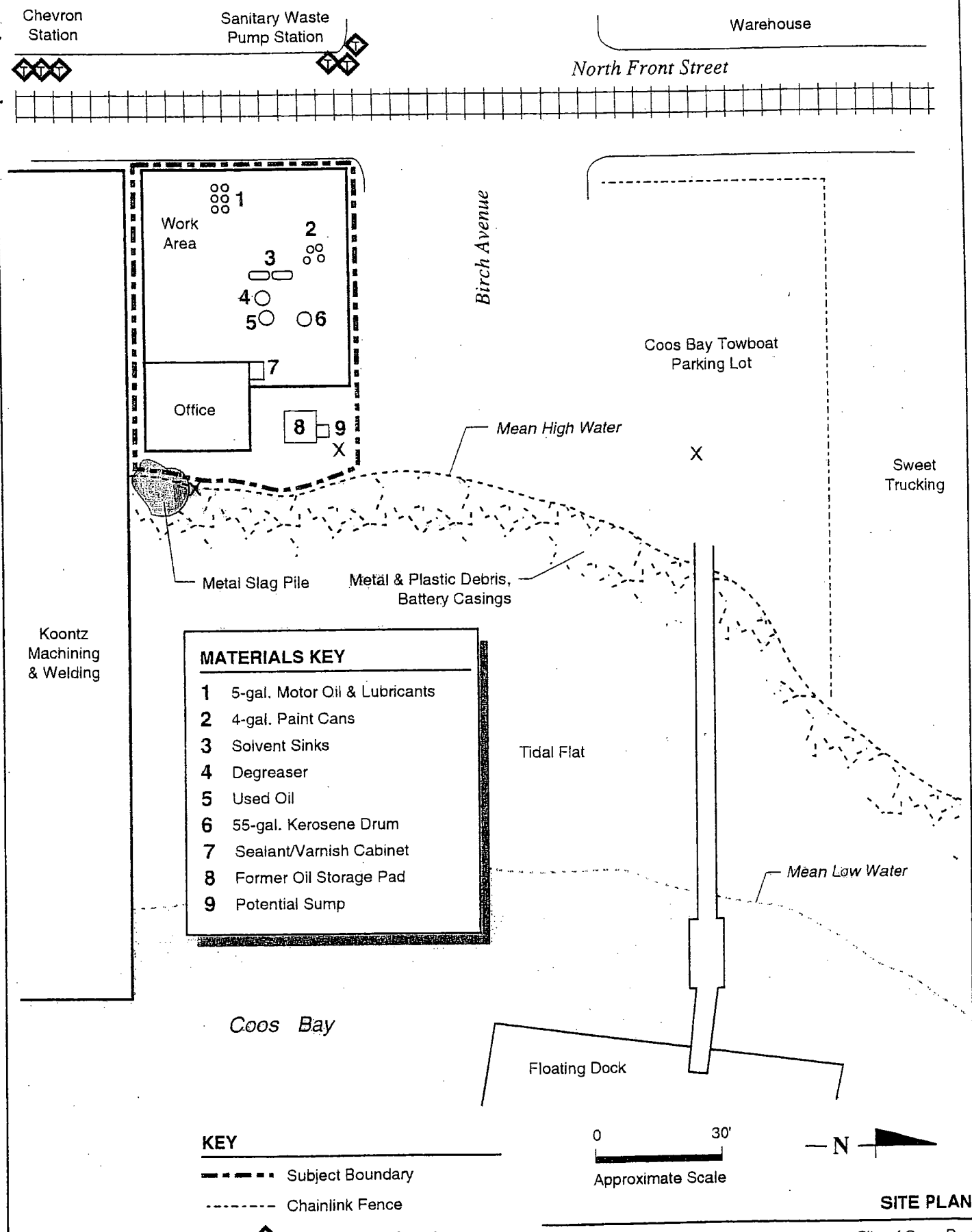
Sample Analysis

Soil samples from the two borings and one from the slag pile will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs. The soil samples from the two borings and the sample collected with the hand auger will be analyzed for RCRA-8 metals and PCBs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-4.

TABLE A-4
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	2	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	2	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260
Soil/Slag	1	Grab/Composite	NWTPH-HCID, PCBs, Metals (RCRA 8)	NWTPH-HCID, 8082, 6010/6020, 8260

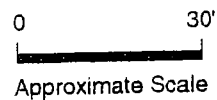


MATERIALS KEY

- 1 5-gal. Motor Oil & Lubricants
- 2 4-gal. Paint Cans
- 3 Solvent Sinks
- 4 Degreaser
- 5 Used Oil
- 6 55-gal. Kerosene Drum
- 7 Sealant/Varnish Cabinet
- 8 Former Oil Storage Pad
- 9 Potential Sump

KEY

- Subject Boundary
- - - Chainlink Fence
- ◆ Pole-mounted Transformer
- X Proposed Sampling Location



SITE PLAN

URS

October 2000
52-00082004.00

City of Coos Bay
Coos Bay Towboat Office Property
Coos Bay, Oregon

FIGURE A4

PROPERTY DESCRIPTION

The Coos Bay Iron Works property is located at 896 North Front Street. The property is situated southeast of the intersection of North Front Street and Date Avenue and consists of an approximately 130 foot by 50 foot parcel (Tax Lot 100). The property is currently occupied in one on-site building. The building was formerly used as a machine shop by Coos Bay Iron Works for the production of heavy logging equipment such as yarders and loaders, motor engines, stoves, and automobile parts. The shop is not currently in use other than for occasional work performed by the current owner.

Hazardous materials or petroleum products currently used in the machine shop appear to be limited to 30-weight oil used to lubricate machinery and components in the process of being machined. Oil in the on-site machinery is caught in trap pans at the base of the machinery and recycled through the equipment. No reports or indications of major spills were observed at the subject property.

A large pile of rusted metal approximately 8 feet in diameter and 6 feet high was observed on a tidal flat of Coos Bay, beyond a deck at the eastern edge of the building. The pile was reportedly formed from metal shavings taken from the machine shop and disposed of by dumping off the edge of the deck. The shavings subsequently rusted together to form the pile. Additional metal parts and debris were observed along the deck on the east and north sides of the property, and a truck and tractor were observed on the north side of the property in a vacated section of Date Avenue.

A tidal mudflat, beyond which is Coos Bay, adjoins the property to the east. The former Hillstrom's Shipyard site (now vacant) adjoins the property to the north, across a vacated and grass covered extension of Date Avenue. A warehouse and associated scrapyard adjoins the property to the west and southwest, and a vacant tidal flat with remnant wooden pilings visible from a former building is located adjacent to the south.

RECOGNIZED ENVIRONMENTAL CONDITIONS

On-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Coos Bay Iron Works property (December 2000), the following on-site REC was identified at the property:

- The long history of industrial operations of current and former tenants or existing conditions represent a REC at the property. The subject property has been occupied by a machine shop, the Coos Bay Iron Works, for over a century. Evidence of dumping of metal shavings from machining work and metal parts and debris were observed in an approximately 8-foot diameter rusted metal pile located on a tidal flat of Coos Bay at the rear of the shop building. It is unknown whether shavings or machine parts disposed of in the pile may have been contaminated by oil associated with the machining process. The pile is unprotected and open to precipitation and tidal water from Coos Bay. There is the potential for soil and

groundwater beneath or near the slag pile to be contaminated by metals, petroleum, or other industrial byproducts.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Coos Bay Iron Works property (December 2000), the following off-site REC was identified:

- The EDR report (1999), and subsequent file reviews at DEQ, suggest that confirmed contaminated sites exist near the subject property that may have impacted soil and groundwater beneath the property. The former Hillstrom's shipyard site, located adjacent to the north of the property, was used by Sause Bros. Ocean Towing Co., Inc. from 1982 to 1983 to perform ship repairs, and by Mid-Coast Marine from 1982 to 1988 for ship painting and sand blasting. According to the DEQ, sediment at and near the site is contaminated by tributyltin (TBT), polyaromatic hydrocarbons (PAHs), PCBs and heavy metals. The primary source of contamination at the site appears to be the use and spread of sandblast grit used to strip marine vessels of antifouling paint at the site.

In 1992, approximately 480 cubic yards of spent sandblast grit were removed from the onshore portion of the property. Large amounts of contaminated soil and sandblast grit remained in the intertidal area to the north and offshore in Coos Bay to the southeast. An additional 770 cubic yards of contaminated soil was removed from the northern and southeastern intertidal areas on and adjacent to the property. Discussions with DEQ indicate that it is unlikely that the full extent of contaminated soils have been removed from the Hillstrom site, and it is possible that contaminated material remains on the property. This contaminated material represents a recognized environmental condition at the subject property.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to current and historic operations at the Coos Bay Iron Works property and related to the off-site former Hillstrom's Shipyard site. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the property using a hand auger. One soil sample will be collected from each of the borings. Approximate sample locations are indicated on Figure A-5. Soil samples from the borings will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. A single grab/composite soil sample will also be collected from the metal slag pile located on the shore of Coos Bay.

Sample Analysis

The two hand auger soil samples will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will be further analyzed for TBT, RCRA-8 metals, PAHs, and PCBs. The grab/composite sample collected from the metal slag pile will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The grab/composite sample will also be analyzed for RCRA-8 metals, PAHs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-6.

TABLE A-5
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	2	Hand Auger	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs, PAHs, Tributyltin	NWTPH-HCID, 8082, 6010/6020, 8260, 8270, TBT ¹
Soil/Slag	1	Grab/Composite	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs	NWTPH-HCID, 8082, 6010/6020, 8260

Notes:

¹ Analysis will be a laboratory-specific standard operating procedure for tributyltin

Former Hillstrom's
Shipyards Site

Date Avenue
(Grass-covered)

Truck Debris

Coos Bay

North Front Street

X Debris X

Steam / Electric Power Delivery

Machinery

Machinery

Machinery

Parts & Raw Material

55-gallon Drum
of 30 Weight Oil

Welding Tanks

Office

Parts
Storage

Steam / Electric Power Delivery

Deck

Metal Debris

Tidal Flat

Metal Slag Pile

Vacant Tidal Flat



NOT TO SCALE

KEY

--- Subject Boundary

Storm Drain

Pole-mounted Transformer

X Proposed Sampling Location

SITE PLAN

City of Coos Bay
Coos Bay Iron Works Property
Coos Bay, Oregon

October 2000
52-00082004.00

URS

FIGURE A5

PROPERTY DESCRIPTION

The Central Dock Company (Central Dock) property is located at 1100 North Front Street. The property is situated northeast of the intersection of North Front Street and North Bayshore Drive and consists of an irregular shaped 1.61 acre parcel (Tax Lot 200). The property is currently occupied by the Central Dock offices, a small paved parking area, and an open mudflat with the remains of washed out support pilings. The property comprises the southern portion of Central Dock's Coos Bay waterfront operations, which extend to the north along North Front Street (U.S. Highway 101).

According to the President and General Manager of Central Dock, the Central Dock offices were built in approximately 1918 or 1920. The current building was constructed by the Ocean Dock Company as part of a larger, approximately two-acre, warehouse structure that extended south of the current building over the eroded pilings and an additional 40 to 50 feet east of the current building over Coos Bay. The original warehouse was reportedly used as a boomyard for a sawmill. The bulk of the former warehouse was torn down in the early 1980's, leaving the current office building and the former support pilings.

RECOGNIZED ENVIRONMENTAL CONDITIONS

According to the findings and conclusions presented in the Phase I ESA report on the Central Dock Company property (December 2000), no on-site RECs were identified. The following off-site REC was identified:

- The EDR report (1999), and subsequent file reviews at ODEQ, suggest that confirmed contaminated sites near the subject property could have impacted soil and groundwater beneath the site. The former Hillstrom's shipyard site, located adjacent to the south of the subject property, was used by Sause Bros. Ocean Towing Co., Inc. from 1982 to 1983 to perform ship repair, and by Mid-Coast Marine from 1982 to 1988 for ship painting and sand blasting. According to DEQ, sediment at and near the site is contaminated by TBT, PAHs, PCBs, and heavy metals. The primary source of contamination at the site appears to be the use and spread of sandblast grit used to strip marine vessels of antifouling paint at the site.

In 1992, approximately 480 cubic yards of spent sandblast grit were removed from the onshore portion of the property. Large amounts of contaminated soil and sandblast grit remained in the intertidal area to the north of this property and offshore in Coos Bay to the east. An additional 770 cubic yards of contaminated soil was removed from the northern and southeastern intertidal areas on and adjacent to the site. Discussions with DEQ indicated that it is unlikely that the full extent of contaminated soils have been removed from the Hillstrom site, and it is likely that contaminated material remains on the subject property to the north of the previously excavated area. There is a high probability that contamination from the Central Dock property has impacted the subject property.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to sand blast grit contamination on the property from to adjoining site operations. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Four soil samples will be collected using a hand auger. The collection of samples with the hand auger is contingent upon accessibility to the tidal flat from where the samples are to be collected. URS will attempt to time sample collection with low tide. Approximate sample locations are indicated on Figure 6-1. The soil samples will be collected from approximately 6 to 12 inches bgs.

Sample Analysis

Soil samples will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will also be analyzed for TBT, RCRA-8 metals, PAHs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-6.

TABLE A-6
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	4	Hand Auger	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs, PAHs, Tributyltin	NWTPH-HCID, 8082, 6010/6020, 8260, 8270, TBT ¹

Notes:

¹Analysis will be a laboratory-specific standard operating procedure for tributyltin

Central Dock
Terminals & Warehouse

Former
UST

Former
Propane AST

Central Dock
Offices

Coos Bay

Extent of
Former Warehouse

Mean Low Water Line

Exposed Pillings
(Mud Flat)

Marshfield Sun
Printing Museum

Wayne's Color Center

Former Hillstrom Shipyard Site



KEY

--- Subject Boundary

▤ Storm Drain

◆ Pole-mounted Transformer

X Proposed Sampling Location

URS

SITE PLAN

October 2000
52-00082004.00

City of Coos Bay
Central Dock Co. Property
Coos Bay, Oregon

FIGURE A6

PROPERTY DESCRIPTION

The Sweet Trucking Company (Sweet Trucking) property is located at 820 North Front Street. The property is situated southeast of the intersection of North Front Street and Cedar Avenue, and consists of an irregularly shaped, approximately 100 feet long by 150 feet wide parcel (Tax Lot 200). The property currently occupied by one on-site building that is used as an office and a truck maintenance shed by Sweet Trucking, Inc. There is a concrete vehicle wash pad adjacent to the maintenance shed. The remainder of the property is covered by asphalt and used for outdoor storage or trailer parking.

According to the President of Sweet Trucking, Inc., Sweet Trucking currently transports lumber, wood chips, or other wood products and has been located on site for approximately 9 or 10 years. The property was reportedly ws occupied by Power Transmissions and Sause Bros. Sause Bros. reportedly used the property as a tugboat engine building facility.

RECOGNIZED ENVIRONMENTAL CONDITIONS

On-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Sweet Trucking Company property (December 2000), the following two on-site RECs were identified at the property:

- Hazardous materials currently used on site that have a potential to impact soil and groundwater appear to primarily be petroleum products. Visible evidence of staining was observed in small areas associated with oil stored in 55-gallon drums and an oil above-ground storage tank (AST) located in the shop building. There is the potential for releases of product at the subject property to have impacted soil or groundwater, creating a REC at the site.
- A large amount of debris, including various rusted metal ship parts, metal slag piles, and plastic battery casings were observed on the rocky shelf on which the subject property is located. This material may have been placed by former operators at the site or might be fill material placed during initial site development. The observations indicate a potential for soil beneath and near the subject property to be contaminated by metals.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Sweet Trucking Company property (December 2000), the following one off site REC was identified:

- The EDR report and subsequent file reviews at DEQ, suggest that one confirmed nearby contaminated site could have impacted soil and groundwater at the property. The site, the New Horizon Trading Company, adjoins the property to the west. According to the DEQ LUST incident report and conversations with DEQ personnel, a UST was decommissioned by removal at this site in 1999. The property owner later contacted DEQ and indicated that water

had been observed in the tank and that soil in the UST excavation pit appeared contaminated by petroleum product. Soil and groundwater at the site have not been sampled for analysis. DEQ reported the site as a LUST site based on a verbal report by the property owner, but DEQ is awaiting further information at this time.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to current or historic operations at the subject property, the possible imported fill material, or the identified off-site source, the New Horizon Trading Company. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property using a Geoprobe rig. One soil and one groundwater sample will be collected from each of the borings, for a total of two soil and two groundwater samples. Approximate sample locations are indicated on Figure A-7. Continuous soil samples from the borings will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for possible laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. Groundwater samples will be collected from the first occurring groundwater.

Sample Analysis

Soil samples from the two borings will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will be further analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-7.

TABLE A-7
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	2	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	2	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260

Scrap
Yard

North Front Street

Exposed Pillings
(Mud Flat)

Old
Propane
Tank

Boat
Truck

1
2
4
5
3

Concrete
Wash Pad

Diesel
AST

Coos Bay

Sweet Trucking

Oil/Water
Separator

Parked Trucks

Drain Outflow

Coos Bay Towboat
Parking Lot

MATERIALS KEY

- 1 Motor Oil AST
- 2 Empty 30-gallon Containers
- 3 Waste Oil Drums
- 4 Solvent Sink
- 5 Diesel Supply for Pressure Washer

KEY

- Subject Boundary
- ▨ Storm Drain
- ◆ Pole-mounted Transformer
- X Proposed Sampling Location

NOT TO SCALE



URS

October 2000
52-00082004.00

SITE PLAN

City of Coos Bay
Sweet Trucking Property
Coos Bay, Oregon

FIGURE A7

PROPERTY DESCRIPTION

The Powers Building property is located at 737 North Front Street. The property is situated northwest of the intersection of North Front Street and Birch Avenue and is approximately 100 feet long by 70 feet wide parcel (Tax Lot 2500). According to the current property owner, the property was purchased in 1998 or 1999 and had previously been used for a variety of businesses, including an industrial saw maintenance and repair shop, a meat and produce storehouse, and a truck repair facility. The property is currently occupied by a large, two-story building and a grass covered alley or access way. The building is currently being renovated for use as a storehouse and retail space.

The property is bordered on the south by Birch Avenue, beyond which is a sanitary sewer pump station, and on the east by North Front Street. Adjacent to the west is a grass-covered alley, beyond which is a commercial building. Adjacent to the north is a work yard or junk storage yard, in which numerous open and stained 55-gallon drums, mechanical and automobile parts, and metal debris were observed.

RECOGNIZED ENVIRONMENTAL CONDITIONS

On-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Powers Building property (December 2000), the following on-site REC was identified at the property:

- The EDR report and subsequent file reviews at DEQ suggest contaminated soil and groundwater may exist beneath the property. According to the DEQ LUST incident report and conversations with DEQ personnel, a UST was decommissioned by removal at the property in 1999. The property owner later contacted DEQ and indicated that water had been observed in the tank and that soil in the UST excavation pit appeared contaminated by petroleum product. Soil and groundwater at the site have not been sampled for analysis. DEQ reported the site as a LUST site based on a verbal report by the property owner, but DEQ is awaiting further information at this time.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Powers Building property (December 2000), the following one off-site REC was identified:

- A junk storage or work yard of the Marshfield Bargain House adjoins the property to the north. Several 55-gallon drums and other potential hazardous material containers exhibiting visible staining were observed in the unpaved work yard area. There is the potential for hazardous material, petroleum, or metals leaking from these containers to have impacted soil and groundwater beneath this adjoining property. Contamination from the Powers Building property could have impacted the subject property.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to a release from the former UST at the property and from an adjoining work yard. sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property using a Geoprobe rig. Two soil and one groundwater sample will be collected from each of the borings, for a total of four soil and two groundwater samples. Approximate sample locations are indicated on Figure A-8. One soil sample will be collected from the approximate depth of the base of the former on-site UST, and one soil sample will be collected from the approximate depth of the water table in each boring. Continuous soil samples from the borings will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. Groundwater samples will be collected from the first occurring groundwater.

Sample Analysis

The two samples collected at the approximate base depth of the former UST will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. If petroleum hydrocarbons are detected in the soil samples, the two soil samples collected at the soil-water interface will be analyzed for total petroleum hydrocarbons, and the two groundwater samples will be analyzed for PAHs. Analytical methods for soil and groundwater samples are listed in Table A-8.

TABLE A-8
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	4 ¹	Geoprobe	NWTPH-HCID	NWTPH-HCID
Groundwater	2 ²	Geoprobe	PAHs	8270

Notes:

¹The two soil samples collected near the water table may need to be analyzed pending the results of the two soil samples collected from the approximate depth of the former UST.

²The two groundwater samples may need to be analyzed pending the results of the two soil samples collected from the approximate depth of the former UST.

PROPERTY DESCRIPTION

The City of Coos Bay Pump Station (Pump Station) property is located at 690 North Front Street. The property is situated southwest of the intersection of North Front Street and Birch Avenue, and consists of an approximately 50 foot by 70 foot parcel (Tax Lot 2100) that is occupied by one on-site building. The building houses a sanitary sewer system pump station operated by the City of Coos Bay. The pump station pumps water to a city water treatment plant approximately one mile north of the pump station. The station was likely built in the early 1950's and was upgraded in 1972 and 1991. Other areas of the property are either covered by gravel or landscaped vegetation

According to a representative of OMI, Inc, the group who maintains the pump station, the 150-kilowatt pump generator is powered by city electricity and has a diesel powered backup generator. The pump station building houses the generator. The building has a concrete vault used for maintaining the pumps.

A former 1,500-gallon capacity diesel fuel UST located at the northeast corner of the property was decommissioned by removal in May 1988. Soil or groundwater samples were not collected or analyzed at the time of decommissioning. It is unknown whether a leak from the former tank may have occurred.

RECOGNIZED ENVIRONMENTAL CONDITIONS**On-Site Recognized Environmental Conditions**

According to the findings and conclusions presented in the Phase I ESA report on the Coos Bay Pump Station property (December 2000), the following on-site REC was identified at the property:

- Before the use of drums for on-site petroleum storage, it was stated that a 1,500-gallon diesel fuel UST located at the northeast corner of the property was decommissioned by removal in May 1988. Soil or groundwater samples were not collected or analyzed at the time of decommissioning. It is unknown whether a leak from the former tank may have occurred.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Coos Bay Pump Station property (December 2000), the following off-site REC was identified:

- The EDR report and subsequent file reviews at DEQ suggested that one confirmed contaminated site that may have impacted soil and groundwater beneath the Coos Bay Pump Station property. The site, the New Horizon Trading Company, adjoins the Pump Station property to the northeast. According to the DEQ LUST incident report and conversations with DEQ personnel, a UST was decommissioned by removal at this site in 1999. The property owner later contacted DEQ and stated that water had been observed in the tank and that soil in the UST excavation pit appeared contaminated by petroleum product. Soil and groundwater at

the site have not been sampled for analysis. DEQ reported the site as a LUST site based on the verbal report by the property owner, but DEQ is awaiting further information at this time.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to the former UST at the property and at the New Horizon Trading Company. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property using a Geoprobe rig. Two soil and one groundwater sample will be collected from each of the borings, for a total of four soil and two groundwater samples. Approximate sample locations are indicated on Figure A-9. One soil sample will be collected from the approximate depth of the base of the former on-site UST, and one soil sample will be collected from the approximate depth of the water table. Continuous soil samples from the borings will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. Groundwater samples will be collected from the first occurring groundwater.

Sample Analysis

The two samples collected at the approximate base depth of the former UST will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. If petroleum hydrocarbons are detected in the soil samples, the two soil samples collected at the depth of the water table will be analyzed for total petroleum hydrocarbons, and the two groundwater samples will be analyzed for PAHs. Analytical methods for soil and groundwater samples are listed in Table A-9.

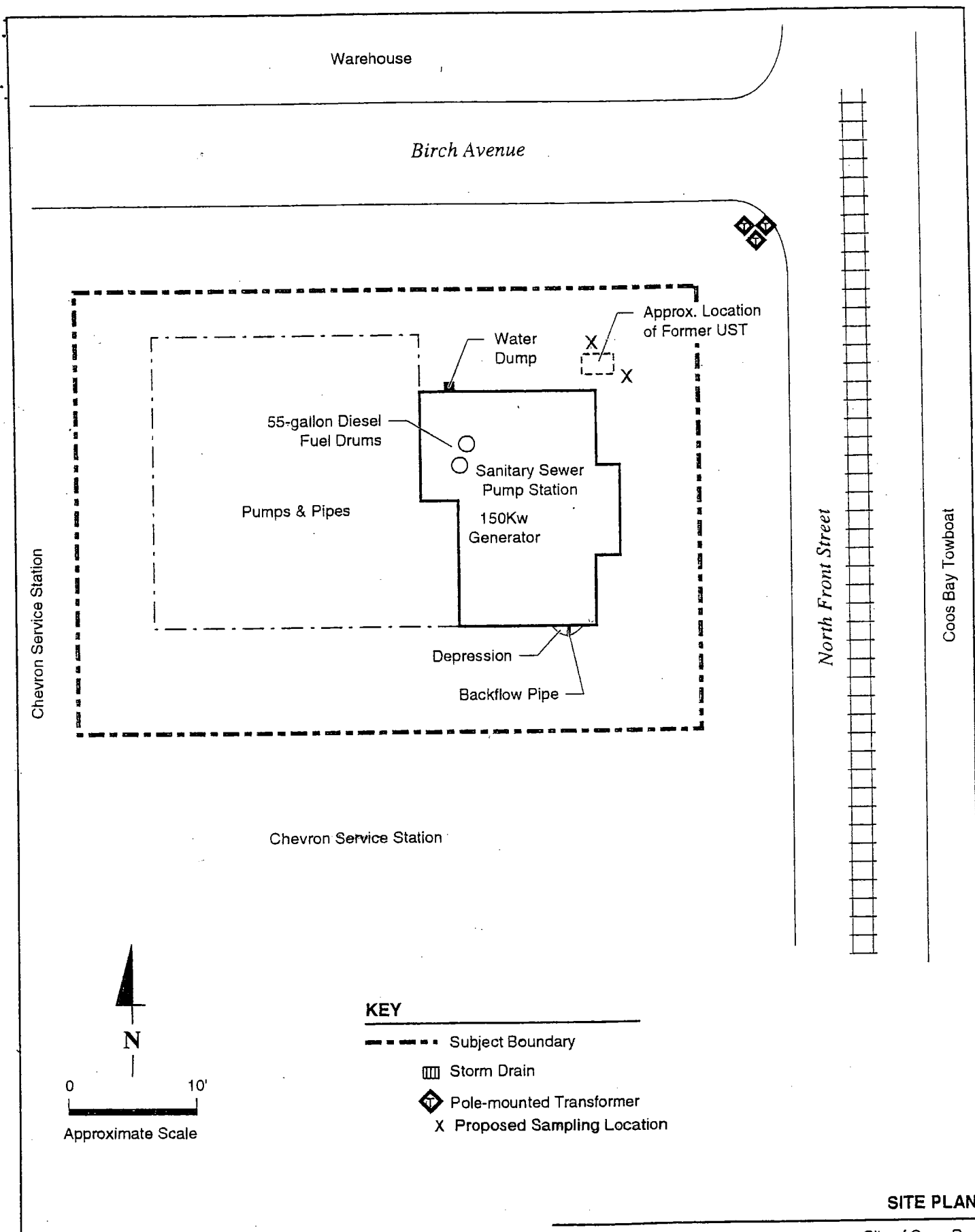
TABLE A-9
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	4 ¹	Geoprobe	NWTPH-HCID	NWTPH-HCID
Groundwater	2 ²	Geoprobe	PAHs	8270

Notes:

¹The two soil samples collected near the water table may need to be analyzed pending the results of the two soil samples collected from the approximate depth of the former UST.

²The two groundwater samples may need to be analyzed pending the results of the two soil samples collected from the approximate depth of the former UST.



SITE PLAN

URS

October 2000
52-00082004.00

City of Coos Bay
City of Coos Bay Pump Station Property
Coos Bay, Oregon

FIGURE A9

PROPERTY DESCRIPTION

The Marshfield Bargain House property is located at 790 North Bayshore Drive. The property is an irregular-shaped 0.62-acre parcel (Tax Lot 2800) improved with a 7,200 square foot single story (with loft) retail store and a 4,320 square foot storage warehouse. The Marshfield Bargain House store sells household furnishings such as dining room and bedroom furniture. In the back of the store is a work area where water pumps for drinking water wells are repaired and a storage area for merchandise and hardware.

Materials and equipment such as PVC piping, radiator cores, used tires, and two forklifts are stored in the storage warehouse. A truck scale is located near the western entrance to the storage building. Several 55-gallon drums containing waste oil are stored in the warehouse building.

Other areas of the property serve as a work and storage area for scrap metal recycling activities. Piles of sorted scrap metal, a stack of unused 55-gallon drums, three hydraulic compactors, hydraulic oil and motor oil dispensers, a diesel fuel AST, and five 55-gallon drums containing waste oil are located in the yard between the buildings.

RECOGNIZED ENVIRONMENTAL CONDITIONS

On-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Marshfield Bargain House property (April 2001), the following on-site REC was identified at the property:

- Stained soil was observed in the yard in the portion of the subject property near five unlabeled 55-gallon drums which reportedly contain waste oil. Stained soil was also observed near 5-gallon containers of roof coating stored on a pallet north of the storage building.

Off-Site Recognized Environmental Conditions

According to the findings and conclusions presented in the Phase I ESA report on the Marshfield Bargain House property (April 2001), the following two off-site RECs were identified:

- A scrap yard is located approximately 50 feet to the east of the property. Visibly stained and discolored soil was observed on the scrap yard property. Metal debris and potential hazardous material or petroleum product containers with visible staining were also observed.
- The former New Horizon Trading Company, an adjoining property to the east of the property located at 737 North Front Street, was identified as a LUST site with reported soil contamination. Soil and groundwater at the site have not been sampled for analysis.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to the areas of stained soil observed on site, the former UST at the New Horizon Trading Company, and operations at the adjoining scrap yard. Sample locations and sample analyses for

this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property using a Geoprobe rig. One soil and one groundwater sample will be collected from each of the borings, for a total of two soil and two groundwater samples. Approximate sample locations are indicated on Figure A-10. Continuous soil samples from the borings will be visually examined for evidence of staining or odors, and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. Groundwater samples will be collected from the first occurring groundwater.

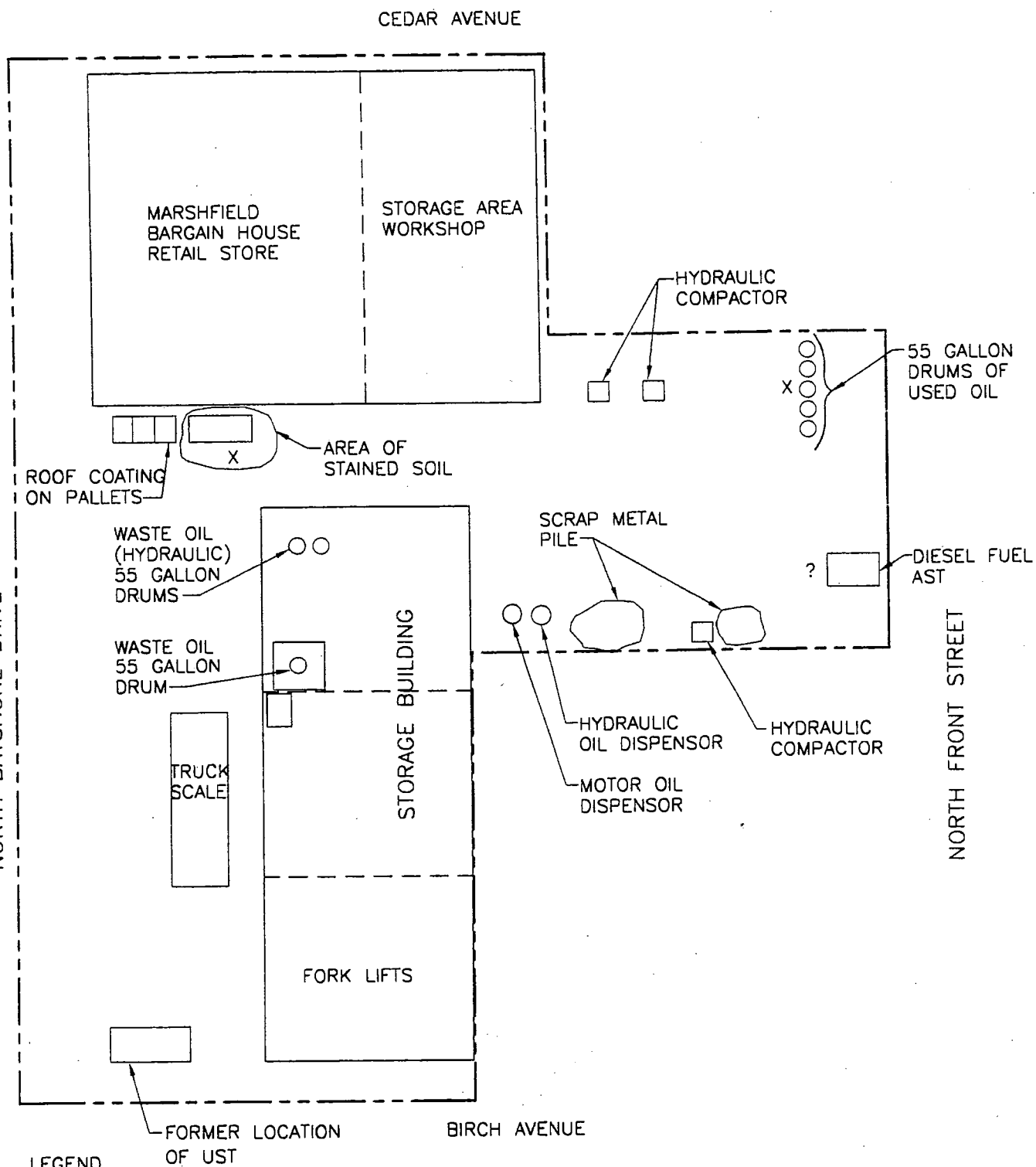
Sample Analysis

Soil samples from the two borings will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will be further analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-10.

TABLE A-10
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	2	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	2	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260



LEGEND

- SUBJECT PROPERTY BOUNDARY
- X PROPOSED SAMPLING LOCATION
- ? PROPOSED ALTERNATE SAMPLING LOCATION
- NOT TO SCALE

SITE PLAN

MARCH 2001
52-00082004.00

City of Coos Bay
Marshfield Bargain House Property
Coos Bay, Oregon

FIGURE-A10

URS

PROPERTY DESCRIPTION

The (b) (6) property is located at 925 North Front Street and consists of an approximately 100 foot by 220 foot parcel (Tax Lot 500) that is currently occupied by one building. The building is used as a cold storage warehouse and ice-making facility by the Arctic Ice Company. Areas of the property not occupied by the building are either paved or covered by soil.

According to the current property owners, the property was initially occupied by a bread delivery business, and then by a cold storage warehouse operated by Pacific Fruit and Produce from the 1930's until 1980 or 1981. The subject property was vacant from that time until it was leased to Arctic Ice in 1987. Arctic Ice purchased the property in 1988.

The on-site operation is separated into two primary areas: cold storage and ice production. The cooler area contains three large cooler or freezer rooms, a tool room, and a small storage area. The freezers are cooled by closed system freon condenser units.

The ice production area contains a 40 ton ice-maker and a 50 ton ice-maker that use a combined total of 500 pounds of freon between the two machines. Excess ice produced by the machines or meltwater from the ice reportedly flows to drains in the floor of the ice production room and is directed to an exterior dry well on the property. The dry well and two cooling towers associated with the ice makers, are located outside the rear of the ice production area at the northwest corner of the property.

RECOGNIZED ENVIRONMENTAL CONDITIONS

According to the findings and conclusions presented in the Phase I ESA report on the (b) (6) property (dated December 2000), the following REC was identified at the property:

- One dry well was observed in the northwest corner of the property, adjacent to the cooling towers. Drains located in the ice production room and in the vicinity of the condenser units reportedly drain excess water to the dry well via onsite pipe connections. No spills of freon or other hazardous substances to the drain system or dry wells are known to have occurred. However, dry wells are recognized as a common source of subsurface contamination.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to the on-site dry well to assess the potential for soil or groundwater to have been affected by a release of freon or other hazardous material to the dry well. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

One boring will be advanced at the subject property using a Geoprobe rig. One soil and one groundwater sample will be collected from the boring. The approximate sample location is

indicated on Figure A-11. Continuous soil samples from the boring will be visually examined for evidence of staining or odors and field screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample from the boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. A groundwater sample will be collected from the first occurring groundwater.

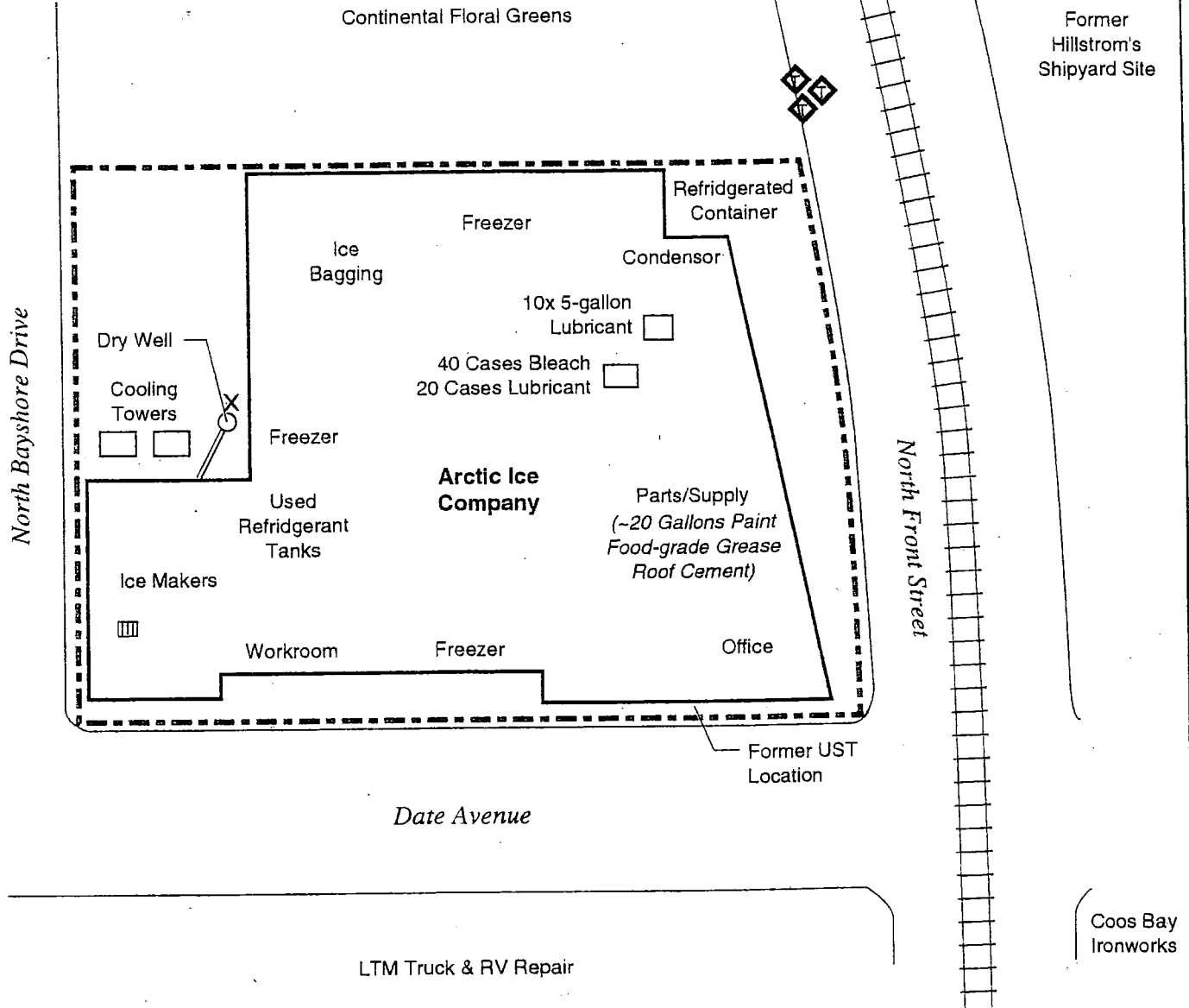
Sample Analysis

The soil sample will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil sample will also be analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soil, the sample will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-11.

TABLE A-11
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	1	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	1	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260



KEY

--- Subject Boundary



Pole-mounted Transformer



Storm Drain

X Proposed Sampling Location

SITE PLAN

URS

October 2000
52-00082004.00

City of Coos Bay
Goergen Property
Coos Bay, Oregon

FIGURE A11

PROPERTY DESCRIPTION

The Sause Brothers Ocean Towing (Sause Brothers) property is located at 310 North Front Street. The property is situated northeast of the intersection of North Front Street and Market Avenue and consists of an approximately 110 foot by 100 foot parcel (Tax Lot 1401). The property is currently occupied by the Sause Bros. Ocean Towing loaders shop, a paved parking area, and a small vegetated area along Coos Bay protected by a bulkhead.

According to Sause Brothers personnel, the on-site building is used as a temporary warehousing facility for loading and unloading barges. Until approximately May 2000 the building was the forklift maintenance shop for Sause Bros. It is believed that the building was constructed in the 1960's by the Ferguson Transfer Company. Sause Brothers purchased the subject property in the early 1980's.

Most of the on-site building is set up as a maintenance or repair facility for forklifts. While some minor vehicular maintenance may still be performed in the shop building, most of equipment in the building reportedly will likely be transferred off site in the near future. The building's concrete floor was cracked or pitted in many areas and contained multiple areas with heavy black staining. Two areas of stained granular absorbent material were observed on the floor in the shop during the site reconnaissance.

RECOGNIZED ENVIRONMENTAL CONDITIONS

According to the findings and conclusions presented in the Phase I ESA report on the Sause Brothers property (December 2000), the following REC was identified at the property:

- Hazardous materials currently used on site appear to primarily consist of petroleum products. Visible evidence of staining was observed on the concrete floor and work benches within the loader's shop and on various drums and containers in the shop. The concrete flooring was cracked and pitted in several areas of the shop. The potential for releases of product at the subject property, and the potential impacts to soil or groundwater, create a REC at the site.

PHASE II ESA SCOPE OF WORK

The objective of this Phase II ESA is to assess the potential for impacts to soil and groundwater related to current or former on-site activities and use of petroleum products. Sample locations and sample analyses for this Phase II ESA are discussed below. Specific sampling procedures, sample handling, and field documentation procedures are discussed in Sections 4, 5, 6, and 7 of the SAP.

Sample Locations and Methods

Two borings will be advanced at the subject property a Geoprobe rig. One soil and one groundwater sample will be collected from each of the borings, for a total of two soil and two groundwater samples. Approximate sample locations are indicated on Figure A-12. Continuous soil samples from the borings will be visually examined for evidence of staining or odors and field

screened for VOCs using an OVA. If the field screening methods indicate potential impacts to soil, samples will be collected for potential laboratory analysis. The sample in each boring with the highest OVA reading or other indications of impact using the field screening methods will be submitted for laboratory analysis. The remaining collected samples will be submitted to the laboratory for archiving if additional analysis is requested. If no indications of impact to the soil in the boring are observed, soil will be collected from the approximate depth of the water table. Groundwater samples will be collected from the first occurring groundwater.

Sample Analysis

Soil samples from the two borings will be analyzed for total petroleum hydrocarbons to assess whether petroleum hydrocarbons are present in the soil samples and whether the hydrocarbon signature is in the gasoline, diesel, or oil range. The soil samples will also be analyzed for RCRA-8 metals and PCBs. If petroleum hydrocarbons are detected in the soils, the samples will also be analyzed for VOCs.

Groundwater samples will be analyzed for RCRA-8 metals (dissolved concentration), VOCs, and PCBs. Analytical methods for soil and groundwater samples are listed in Table A-12.

TABLE A-12
Sample and Analyses Summary

Media	Quantity	Sample Collection Method	Test Parameters	Analyses
Soil	2	Geoprobe	NWTPH-HCID, PCBs, Metals (RCRA 8), VOCs (Hold per HCID results)	NWTPH-HCID, 8082, 6010/6020, 8260 (Hold per HCID results)
Groundwater	2	Geoprobe	PCBs, Metals (RCRA 8), VOCs	8082, 6010/6020, 8260

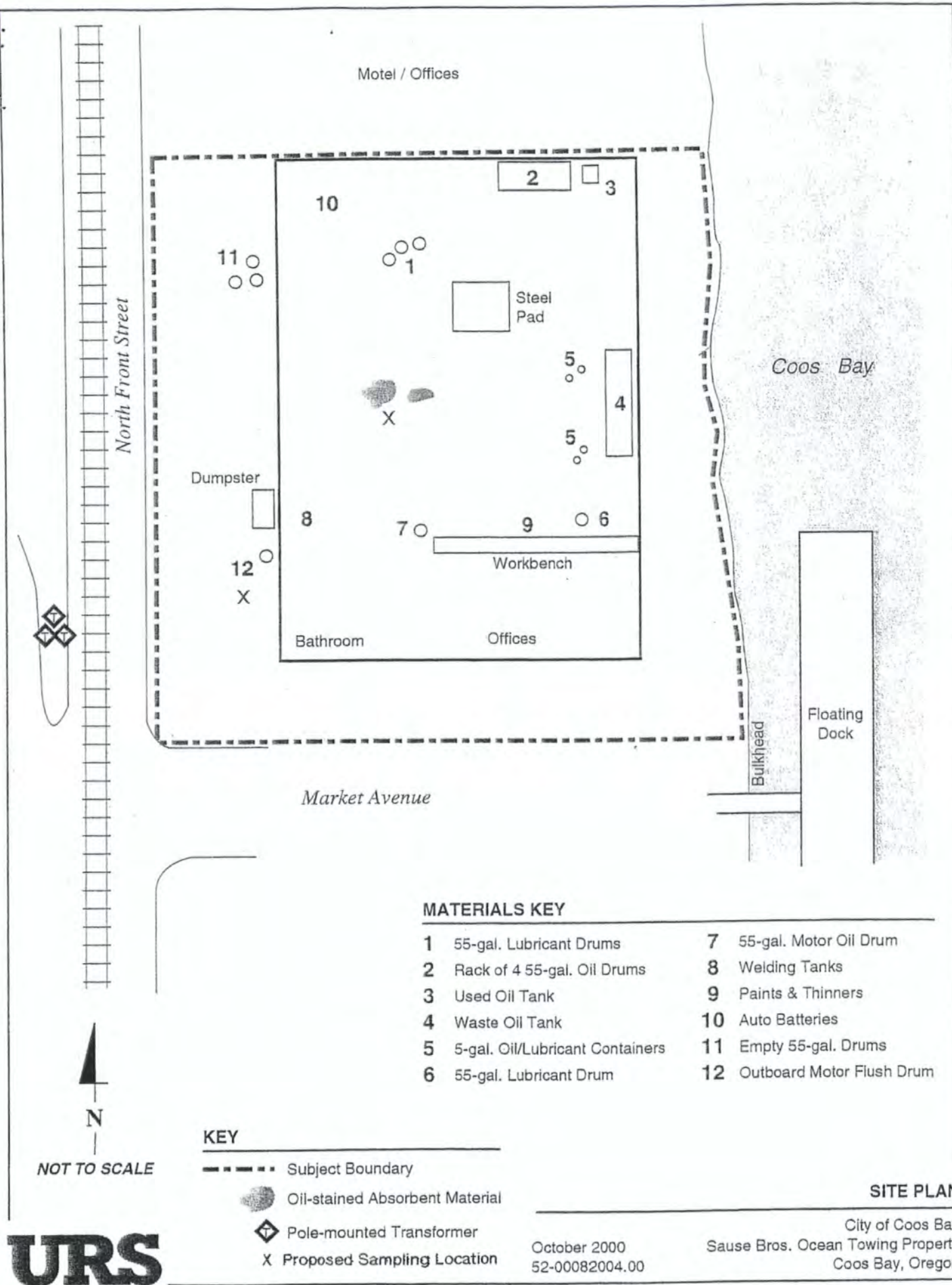


FIGURE A12

Soil Classification and Descriptions

The soil samples will be visually observed in the field and described in general accordance with the Unified Soil Classification System.

Specific sample information to be noted includes:

- Soil Name
- USCS Group Symbol
- Color (Munsell Soil Color Charts, revised 1992)
- Grain size and distribution
- Soil particle lithology
- Gradation
- Plasticity
- Bedding or sedimentary structures
- Chemical precipitates
- Organic material
- Moisture content
- Background odor

Other observations, such as field screening data, visual evidence of contamination or lack thereof, will also be noted. Observations will be recorded on the soil boring log or the field sampling sheet for future reference. An example of a soil boring log and a field sampling data sheet is presented in Appendix C. Other information to be noted on the boring log and field sampling sheet include:

- Project name and location
- Project number
- URS Scientist's name
- Sample number
- Sample location

SOP2
Vapor Headspace Screening

Soil samples will be screened for evidence of VOCs using a portable OVA with a PID or FID detector. Before use, the instrument will be calibrated to a known concentration of calibration gas, in accordance with the manufacturer's specifications.

The manufacturer and model number of the instrument used will be recorded in the field logbook or field sampling sheet.

Each soil sample will be screened for VOCs with the OVA by the following sequential procedure:

1. Place a representative portion of freshly exposed, uncompacted soil into a clean resealable plastic bag. Fill the bag to approximately 50 percent capacity.
2. Seal the bag.
3. Allow the bag to sit at ambient temperature for three to five minutes.
4. Carefully insert the probe of the analytical instrument through the plastic bag.
5. Record the sample concentration observed on the soil boring log (Appendix C).

Calibration procedures:

Photoionization Detector. The PID will be initially zeroed using ambient air from the general area where the work will be done. A standard gas of 100 ppm isobutylene gas is then used to calibrate the PID. If readings are questionable, the PID will be recalibrated using new 100 ppm isobutylene gas.

Flame Ionization Detector. The FID will initially be zeroed using ambient air from the general area where the work will be done. A standard gas of 100 ppm methane gas is then used to calibrate the FID. If readings are questionable, the FID will be recalibrated using new 100 ppm methane gas.

This SOP describes the decontamination procedures for any non-dedicated sampling equipment that comes in contact with potentially contaminated soil or groundwater. Small equipment (e.g., water samplers, water level meter, etc.) will be decontaminated as follows:

1. Remove visible contamination by scrubbing or brushing equipment in potable water.
2. Soap wash (dilute solution of Alconox or equivalent in potable water solution).
3. Rinse with potable water.
4. Rinse with HPLC grade methanol.
5. Rinse with organic-free deionized water.

In general, soil and groundwater sampling will be conducted using dedicated or disposable equipment. Decontamination fluids will be containerized and marked in accordance with discussion in Section 7 of this SAP.

Large equipment, such as probe rods, probe bits, split spoon samples and any other drilling equipment that comes in contact with potentially contaminated soils will be steam cleaned between probe holes and before leaving the site.

pH, Specific Conductance, and Temperature Measurements

The pH of a solution is the hydrogen ion concentration of the solution, commonly referred to as acidic or basic. Values of pH range from 0 to 14. Values from 0 to 7 are acidic, and values of 7 to 14 are basic. Pure distilled water has a neutral pH of 7.

Conductance is the ability of materials to carry an electrical current. Specific electrical conductance (conductivity) is a measure of conductance under defined measurement conditions. Conductivity is defined as the reciprocal of resistance as measured in ohms ($1/\text{ohm}=1 \text{ mho}$) per centimeter. The units of conductivity are commonly expressed in mmhos or μmhos ($1 \text{ mho}=1,000 \text{ mmhos}=1,000,000 \mu\text{mho}$)¹.

Field measurements of groundwater parameters will be made with a portable, battery powered instrument, such as the HyDAC 910 Conductivity-Temperature-pH Meter. The HyDAC measures pH from 0 to 14 with an accuracy of 0.01 units. Specific conductance can be measured on 4 ranges (0-20, 0-200, 0-2,000 and 0-20,000 μmhos) with an accuracy of ± 2 percent. Temperature reads from 0 to 160° C, $\pm 2^\circ \text{C}$.

Measurement

Measurements of groundwater pH, specific conductance, and temperature will be completed during groundwater sample collection as described in the SAP.

Summary of procedures for pH, specific conductance and temperature:

1. Calibrate instrument (see below).
2. Rinse built-in sample cup with distilled water and then with sample.
3. Remove sample probe from storage vial and connect to the instrument.
4. Rinse sample probe with distilled water and then with sample.
5. Fill sample cup with fresh sample and insert probe.
6. Select temperature setting and depress the read button. Temperature should be measured first as the reading will change rapidly. Record sample temperature to the nearest 1°C .
7. Select the pH setting and depress the read button. Record pH to the nearest 0.1 unit.
8. Select conductivity and depress the read button. Adjust conductivity range to provide the best resolution and record value.

¹ S.I. units of conductivity may be used in place of mhos; $1 \text{ mho}=1 \text{ Siemen (S)}$.

Instrument Calibration

Calibration will be completed in accordance with the manufacture's instruction. Procedures for instrument calibration and use are described in the HyDAC 910 Instrument Manual.

The instrument will be calibrated for pH and specific conductance as follows:

pH

1. At a minimum, calibration should be completed:
 - Each work day before use (two buffers)
 - Every two hours (one buffer)
 - After 10 measurements (two buffers)
2. Instrument calibration will be completed using fresh commercial buffer solutions, which are no more than 3 pH units apart, and that bracket the expected sample pH. Solutions of pH 4, 7, and 10 will be available in the field.
3. The electrode should be rinsed first with distilled water and then with the buffer solution before placement in the buffer for calibration.
4. As a check on instrument accuracy, a standard solution will be measured at the beginning of each day of use after instrument calibration. The procedure for measurement will be similar to that for a typical sample.

Specific Conductance

As a check on instrument accuracy, a standard solution will be measured at the beginning of each day of use. The procedure for measurement will be similar to that for a typical sample.

Storage

For temporary storage, place the sample probe in the into the probe storage vial, which contains distilled water. Prepare as new electrode prior to next use. Inspect electrode regularly for damage or salt crystal build-up. Maintenance will be performed by the manufacturer, as necessary.

LOG OF BORING NO. _____

Project _____ Job No. _____
 Elevation Top of Hole _____ Datum _____ Prepared By _____ Date _____
 Type / Size of Boring _____ Rig Type _____ Driller _____ Reviewed By _____ Date _____

DEPTH, FEET	PENETRATION RESISTANCE BLOW / FOOT		SAMPLE TYPE	DRY DENSITY, PCF	WATER CONTENT, %	SOIL CLASSIFICATION	SOIL TYPE DESCRIPTION (Modifier, Color, Density, Moisture, etc.)	MAXIMUM SIZE	PARTICLE SIZE DISTRIBUTION, %				GRADATION		GRAIN SHAPE			RELATIVE DENSITY			PLASTICITY			CONSISTENCY			CEMENTATION									
	C	N/R							BOULDERS / COBBLES	GRAVEL	SAND	SILT & CLAY	WELL	MEDIUM	POOR	ANGULAR	SUBANGULAR	SUBROUNDED	ROUNDED	LOOSE	MED. DENSE	DENSE	VERY DENSE	NONE	LOW	MEDIUM	HIGH	SOFT	FIRM	STIFF	VERY STIFF	HARD	NONE	LIGHT	MODERATE	HEAVY
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GROUNDWATER CONDITIONS: Date _____ No Groundwater Encountered _____
 Date _____ Time _____ Depth _____
 Date _____ Time _____ Depth _____

FIELD SAMPLING DATA SHEET

Sample Type: _____	Sample Number: _____	Date: _____
Project: _____	Project Number: _____	Task: _____
Weather Conditions: _____	Sample Matrix: _____	
_____	Comments: _____	

PID/FID Backgd: ____/____ ppm	Sample Location: _____										
Head Space ____ / ____ ppm	_____										
P.I.D/FID Calibration Standard: _____	Sample Depth: _____										
P.I.D./FID Calibration Date : _____	Sample Time: _____										
Soil Type: (USCS) _____	Number of Sample Containers: _____										
Description: _____	<table><thead><tr><th colspan="2">Analyses</th></tr></thead><tbody><tr><td>1.</td><td>2.</td></tr><tr><td>3.</td><td>4.</td></tr><tr><td>5.</td><td>6.</td></tr><tr><td>7.</td><td>8.</td></tr></tbody></table>	Analyses		1.	2.	3.	4.	5.	6.	7.	8.
Analyses											
1.	2.										
3.	4.										
5.	6.										
7.	8.										
_____	Other Field Measurements: _____										
_____	_____										
_____	QA/QC samples: _____										
_____	Sampling Method: _____										
Decontamination Method: _____	Grab: _____ Composite: _____										
_____	Sampler (s): _____										
_____	Signature: _____										
General Comments: _____											

GROUNDWATER SAMPLING DATA SHEET

Well Number: _____	Sample Number: _____	Date: _____
Project: _____	Project Number: _____	Task: _____
Weather Conditions: _____		Observations/Comments: _____

PID/FID Backgd: ____/____ ppm In-pipe ____/____ ppm % LEL / % O ₂ Backgd: ____/____ % In-pipe ____/____ % P.I.D./FID Calibration Standard: _____ P.I.D./FID Calibration Date : _____ Well Depth: _____ feet BTOC or bgs Water Depth: _____ feet BTOC or bgs Feet of Water: _____ feet Gallons per Foot: _____ gallons/feet Well Volume: _____ gallons Purge Volume: _____ gallons Observation for sheen or LNAPL: _____ Observation for DNAPL: _____ Observation and condition of the well: poor satisfactory new If poor, note deficiencies: _____ Pump hoses and/or bailer ropes were new, cleaned or dedicated? _____ General Comments: _____ _____	Measuring Point (MP): _____ TOC _____ gs; PVC or stainless Elevation of MP: _____ feet Elevation of Water: _____ feet Well Diameter: _____ inches <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="width: 50%;">Well Diameter</th> <th style="width: 50%;">Gallons per casing foot</th> </tr> <tr> <td>2 inches</td> <td>0.16</td> </tr> <tr> <td>3 inches</td> <td>0.367</td> </tr> <tr> <td>4 inches</td> <td>0.65</td> </tr> </table> pH meter #: _____ Calibration date: _____ Conductivity meter # _____ Calibration date: _____ QA/QC samples: _____ Purge Method: _____ Sample Method: _____ Water Disposal: _____ Sampler(s): _____	Well Diameter	Gallons per casing foot	2 inches	0.16	3 inches	0.367	4 inches	0.65
Well Diameter	Gallons per casing foot								
2 inches	0.16								
3 inches	0.367								
4 inches	0.65								

Field Parameters	Before Purging	Volume 1	Volume 2	Volume 3	Volume 4	Volume 5	Sample
Volume (gallons)							
24- hour Time							
pH							
Conductivity ()							
Temp. °C or °F							
Turbidity/color							
Diss. Oxy. (mg/L)							
Eh ()							

Analyses	Method	Bottle Type	Preservative	Number	Number MS/MSD

DRAFT

**HEALTH AND SAFETY
PLAN
PART II OF THE WORK PLAN
PHASE II ENVIRONMENTAL SITE
ASSESSMENT
Coos Bay Brownfield Project**

**Front Street Urban Renewal and Development Project—
Waterfront Heritage District**

May 2001

Prepared for:

CITY OF COOS BAY

500 Central Avenue

Coos Bay, Oregon 97420

Prepared by:

URS

111 S.W. Columbia, Suite 900

Portland, Oregon 97201-5814

52-00082004.00

HEALTH AND SAFETY PLAN
GeoProbe Drilling and Hand Auger Sampling
Coos Bay Brownfield Project
Coos Bay, Oregon

PHONE

Project Number: 52-00082004.00
Project Manager: Jeff Wallace 503-948-7242
Plan Preparer: Shawn C. Williams 503-948-7246
Preparation Date: April 13, 2001
Expiration Date: February 2002

APPROVALS

Plan Preparer:

(DATE)

Regional Health and Safety Manager:

(DATE)

Project Manager:

(DATE)

Project Principal-in-Charge:

(DATE)

THIS HSP IS TO BE USED FOR THE SPECIFIC PROJECT DESCRIBED HEREIN. IT IS NOT TO BE USED FOR ANY OTHER PROJECT, NOR IS IT TO BE USED FOR PROJECTS IN WHICH SIGNIFICANT CONTAMINANT REMOVAL IS REQUIRED.

SITE HEALTH AND SAFETY PLAN GEOPROBE DRILLING ACTIVITIES

Activities covered under this HSP include the oversight of geoprobe drilling, the advancement of hand auger borings, and soil and groundwater sampling activities. This plan has been developed for URS personnel; it is not intended for subcontractor or client use.

URS personnel on this project must meet the training requirements of 29 CFR 1910.120(e) and be participating in a medical surveillance program as per 29 CFR 1910.120(f). Eating, drinking and smoking will only be allowed in designated areas of the support zone.

This plan is valid only for the specific project identified in the following project description. The Project Manager and Site Safety Officer are responsible for implementation of this plan that includes the site safety briefing. Field activities are limited to providing general oversight in accordance with the workplan, and obtaining soil and/or groundwater samples for laboratory analysis.

PROJECT DESCRIPTION

Project Name Coos Bay Brownfield Project Field Dates To Be Determined
Site Addresses 925 N. Front Street, 310 N. Front Street, 737 N. Front Street, 690 N. Front Street, 896 N. Front Street, 1100 N. Front Street, 820 N. Front Street, 891 N. Front Street, 680 N. Front Street, 600 N. Front Street, 686 N. Front Street, 790 N. Bayshore Drive, & TL500

SITE HISTORY

The work is being conducted as part of the City of Coos Bay's Brownfield Development Pilot Project – Waterfront Heritage District. The project area is located within the City of Coos Bay and has historically been developed with various light industrial and commercial operations since approximately the late 1800's. These operations have historically included businesses related to the wood products, fishing, machining, and shipping industries. Several sites within the Waterfront Heritage District are identified in Oregon Department of Environmental Quality (ODEQ) databases as having environmental conditions or historical environmental conditions.

Twenty-six separate Phase I Environmental Site Assessments (Phase I ESAs) were completed by URS during 2000. Two Phase I ESAs were completed during the first quarter of calendar year 2001. The properties evaluated included both public and privately owned properties within an area of approximately 15 acres in downtown Coos Bay. Each Phase I ESA report generated during this project summarized the investigative

activities conducted, findings, and provided a discussion of Recognized Environmental Conditions (RECs). Due to on-site and/or off-site RECs, Phase II ESA work has been recommended for 22 of the sites. This HSP cover field work at the 12 sites identified in Tables 1-1, 1-2, and 1-3 of the SAP.

SCOPE OF WORK

The scope of work includes the advancement of subsurface borings by either direct push drilling techniques (Geoprobe) or hand auger. Soil samples will be collected during the advancement of the borings for analysis of the compounds of concern. Soil samples will also be field screened for potential volatile organic vapors as a part of the field activities. If the borings encounter groundwater, groundwater samples will also be collected for analysis.

RESPONSIBLE PERSONNELNamePhoneProject Manager Jeff Wallace 503-948-7242Site Manager To Be DeterminedSite Safety Officer To Be DeterminedPLAN PREPARER Shawn Williams Date April 13, 2001REGIONAL HEALTH AND SAFETY MANAGER (RHSM) Mark Litzinger, CIHRHSM PHONE NUMBERS (206) 438-2700 (Seattle Office)**EMERGENCY/CONTINGENCY INFORMATION**Hospital/Clinic Bay Area Hospital Phone No. 541-269-8148Hospital Address 1775 Thompson Road; Coos Bay ORParamedic 911 Fire Dept. 911 Police Dept. 911**Hospital Directions:**

To reach the hospital from the sites, travel north on HWY 101 and turn left (west) on Koosbay Blvd. to on 10th Street. Turn right on 10th Street and proceed on 10th to Thompson Road and turn left (west). Follow the signs to the entrance of the hospital (see map).

EMERGENCY/CONTINGENCY PLAN

Coordinate evacuation procedures with the drilling contractor and remain a safe distance from the emergency. Perform First Aid and CPR as warranted by the situation. Do not move personnel with suspected neck or back injuries. Report all injuries to the supervisor (see Attachments). Note: the hospital route map is located in the Attachments.

CHEMICAL HAZARDS

Chemical Name	OSHA PEL	Concentration Present Soil	Water	Health Hazards/ Target Organs	Symptoms Of Overexposure
Gasoline	300 ppm	Unknown	Unknown	Eye & Throat Irritant	Headache, Nausea,

Chemical Name	OSHA PEL	Concentration Present Soil	Water	Health Hazards/ Target Organs	Symptoms Of Overexposure
					Dizziness & Blurred Vision
Diesel	None	Unknown	Unknown	Skin Irritant & Central Nervous System Depressant	Headache, Nausea, Dizziness, Incoordination & Vomiting
Benzene	1 ppm	Unknown	Unknown	Eye Irritant & Central Nervous System Depressant	Headache, Nausea, Tremors & Fatigue
Ethyl Benzene	100 ppm	Unknown	Unknown	Eye, Mucous Membrane & Skin Irritant	Irritation of eyes, Headache & Dermatitis
Toluene	100 ppm	Unknown	Unknown	Eye Irritant & Central Nervous System Depressant	Headache, Nausea, Dizziness & Fatigue
Xylene	100 ppm	Unknown	Unknown	Eye, Nose, Throat & Skin Irritant, Central Nervous System Depressant	Headache, Nausea & Fatigue
Used Motor Oil	None	Unknown	Unknown	Skin Irritant & Gastrointestinal Irritation	Nausea, Vomiting & Diarrhea

PHYSICAL HAZARDS

Physical hazards are inherently present during environmental sampling and drilling activities. Common physical hazards include mechanical hazards, noise exposure associated with the operation of sampling equipment, slip-trip-fall hazards associated with the field environment, hazards associated with weather conditions, musculoskeletal injury resulting from lifting tasks, and explosion hazards from underground pipes or lines that may be encountered during the drilling process. The typical physical hazards anticipated to be present on the site and the methods for preventing injury due to these hazards are described below.

Sampling Equipment - Operation of Geoprobe drilling and sampling equipment presents potential physical hazards to personnel. During site activities, personal protective equipment (PPE) such as steel-toed shoes, safety glasses or goggles, and hard hats should be worn whenever such equipment is present, and personnel should at all times be aware of the location and operation of sampling equipment and take precautions to avoid getting in the way of its operation.

Noise - The primary noise hazard at this site is from the Geoprobe drilling equipment. Whenever feasible, noise levels, identified as exceeding 85 decibels, will be reduced by means of personal protective equipment. Ear plugs or muffs will be worn at all times when URS personnel are within 25 feet of operating equipment. Hearing protection will also be worn near generators, concrete cutters, and any other high noise emitting equipment. See URS SMS 26 for additional information.

Slip-Trip-Fall Hazards - Slip-trip-fall hazards are common at field sites due to open holes; muddy, slippery or unstable surfaces; and equipment on the ground. While it is difficult to eliminate all slip-trip-fall hazards, implementing safe work practices, utilizing proper footwear, and keeping the work area free of obstructions will minimize risk of injury.

Lifting Hazards - Field operations often require lifting tasks. Workers must implement proper lifting procedures, such as keeping the load close to the body, and using leg muscles instead of back muscles to perform lifting tasks. Additionally, employees will not attempt to lift large, heavy, or awkwardly shaped objects without assistance. See URS Safety Management Standard (SMS) 45 for additional information.

Weather - Weather conditions are an important consideration in planning and conducting site operations. Extremely hot or cold weather can cause physical discomfort, loss of efficiency and personal injury. Of particular importance at drilling sites is heat stress, often resulting from the use of impermeable protective clothing, which decreases the body's natural cooling processes.

Lightning may accompany storms, creating an electrocution hazard during outdoor operations. To eliminate this hazard, weather conditions will be monitored and work suspended during electrical storms.

The following potential weather hazard exists at the site:

☒ Heat Stress (during summer months)

☒ Cold Stress (during rainy season)

☐ Neither is anticipated

Underground Utilities - Underground utility locations in the work area must be located by a qualified utility locating subcontractor hired by either URS or the drilling contractor prior to the commencement of drilling activities. The proper utility company personnel should certify the deactivation of utilities. See URS SMS 34 for additional information.

Overhead Hazards - Overhead power lines pose a danger of shock or electrocution if the power line is contacted or severed during site operations. Prior to conducting work in areas where overhead lines could be impacted, the appropriate utility company will be notified and information will be obtained regarding the line voltage and the minimum separation distance required for work in this area. See URS SMS 34 for additional information.

Work Area Protection - As the project operation may be undertaken in a roadway or parking lot, motor vehicles may be a hazard. Guidance on properly conning and flagging the work area is located in the Attachments. See URS SMS 32 for additional information.

MONITORING EQUIPMENT

The following monitoring equipment will be used during drilling activities:

☒ Organic Vapor Analyzer

☐ Microtip w/lamp ☐ eV

☐ HNu w/lamp ☐ eV

☐ Organic Vapor Monitor w/lamp ☐ eV

☐ Explosimeter

☐ MiniRAE PID w/lamp 10.6 eV.

The monitoring equipment must be calibrated in accordance with the manufacturer's instructions. In addition, the results of daily instrument calibrations shall be logged in the field logbook, or on the Daily Instrument Calibration Check Sheet found in the Attachments.

ACTION LEVELS

Action levels and response criteria are presented below. Initial monitoring is conducted on a regular basis (every 10 minutes) in the work area. Readings are to be recorded in the field logbook.

Analyzer Reading	Location	Duration	Action	Personal Protective Equipment
< 15 ppm	Point of Operations/ Release Source Point	Not Applicable	Continue periodic monitoring.	Minimum Site Ensemble (Hardhat, Steel-toed boots, eye protection, hearing protection)
> 15 ppm	Point of Operations/ Release Source Point	>1 minute	Monitor OBZ; don protective clothing; establish work zones	Minimum Site Ensemble, PLUS: Tyvek coveralls, Nitrile Outer Gloves, and Nitrile Inner (surgical) Gloves
< 15 ppm	OBZ	-----	No respirators required.	Same as above
> 15 ppm	OBZ	>1 minute	Provide respiratory protection; establish decon area	Add Half-face respirators with organic vapor cartridges
> 75 ppm	OBZ	>1 minute	Increase respiratory protection.	Replace face respirators with full-face respirators with organic vapor cartridges.
> 150 ppm OR > 300 ppm	OBZ OBZ	>1 minute instanta- neous	Stop work; move upwind while vapors dissipate. If elevated levels remain, cover boring and cuttings, evacuate upwind and notify RHSM or PM.	As specified by RHSM

(OBZ - Operator's Breathing Zone)

SITE CONTROL

Work area barricades will be used to prevent access by unauthorized persons. Yellow caution tape and/or sawhorse-type barricades can be used for this purpose. Formal work zones will be implemented if the analyzer reading exceeds 15 ppm in the work area.

Wash hands thoroughly before eating. Clean-up and wash hands and face when work activities are completed. Formal decontamination procedures are required if the analyzer reading exceeds 15 ppm in the OBZ (see Attachments).

R = Required A = As Needed

The HSP Preparer has conducted a Hazard Assessment for this project based upon information provided by the Project Manager, in accordance with 29 CFR 1910.132 (d).

(T) See the information sheet found in the Attachments.

ATTACHMENTS

Hospital Route Map
Incident Report Form (SMS 049 Attachment 49-1)
Material Safety Data Sheets

SAFETY MANAGEMENT STANDARDS

The following URS Safety Management Standards are attached to this HSP:

- SMS 001 – Inspections by Regulatory Agencies
- SMS 002 – Worker Right-to-Know
- SMS 003 – Emergency Action Plans
- SMS 014 – Fire Prevention
- SMS 017 – Hazardous Waste Operations
- SMS 019 – Heavy Equipment Operations
- SMS 026 – Noise and Hearing Conservation
- SMS 027 – Work Over Water
- SMS 030 – Sanitation
- SMS 034 – Utility Clearances and Isolation
- SMS 042 – Respiratory Protection
- SMS 045 – Back Injury Prevention
- SMS 046 – Subcontractor Health and Safety Requirements
- SMS 049 – Injury/Illness/Incident Reporting
- SMS 050 – Specific Chemical Hazards
- SMS 051 – Bloodborne Pathogens
- SMS 055 – Health and Safety Training
- SMS 056 – Drilling Safety Guidelines
- SMS 057 – Vehicle Safety Program

SAFETY COMPLIANCE AGREEMENT, BRIEFING FORM,
AIR MONITORING LOG, AND CALIBRATION CHECK SHEET FOR

COOS BAY BROWNFIELD PROJECT

I have read the Health and Safety Plan for the project and I understand it, and agree to comply with all of its provisions. I understand that I could be prohibited from working on the project for violating any of the health and safety requirements specified in the Plan.

	Name	Signature
URS Site Manager	_____	_____
URS Site Safety Officer	_____	_____
URS Site Personnel	_____	_____
URS Site Personnel	_____	_____

SAFETY ISSUES

	DISCUSSED	
	Yes	No
Protective Clothing/Equipment	___	___
Chemical and Physical Hazards	___	___
Control Methods	___	___
Air Monitoring Action Levels and Requirements	___	___
Nearest Phone	___	___
Hospital Name/Address/Directions	___	___

Meeting conducted by: _____ Date: _____

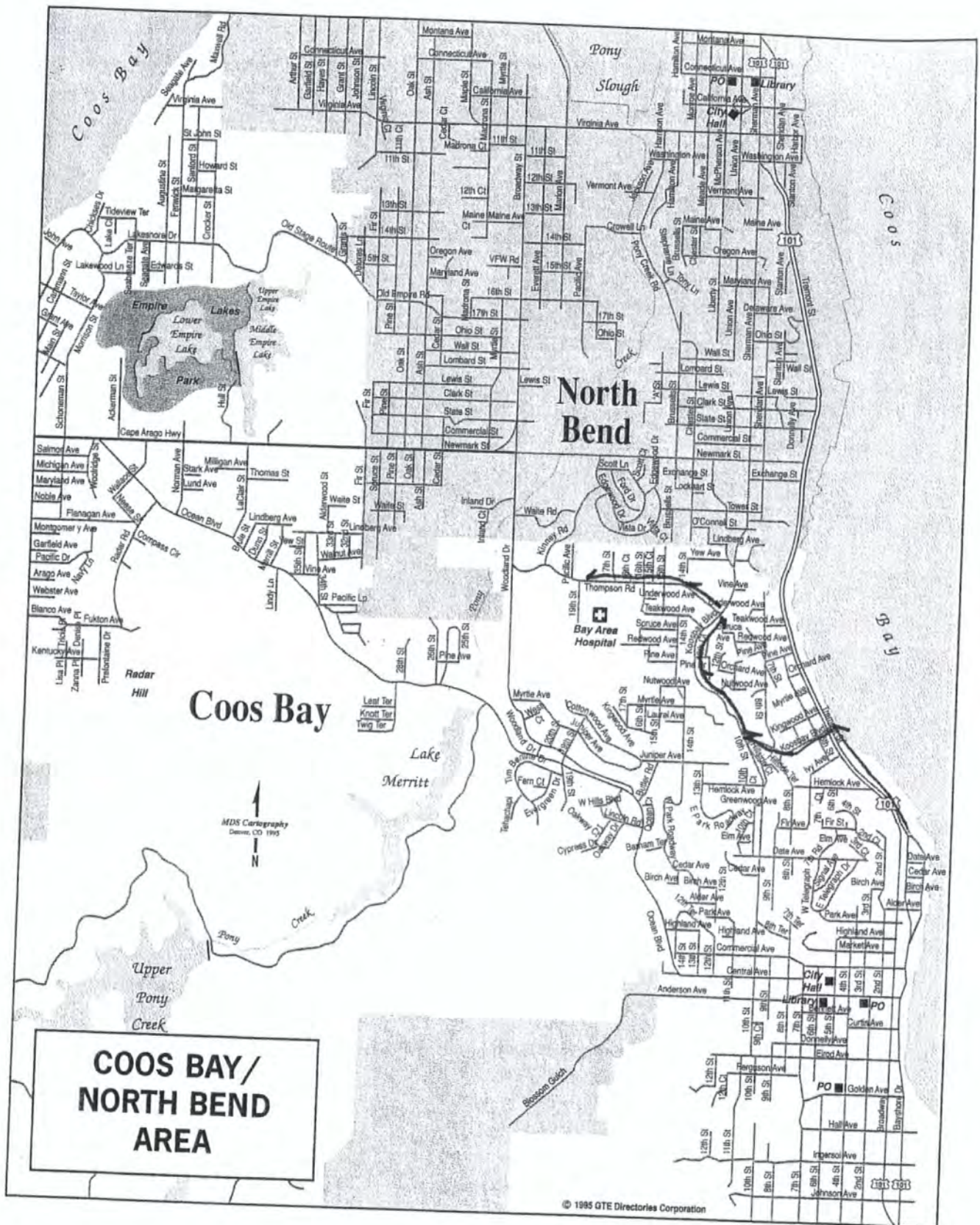
Attendees' Names (print)	Signatures
_____	_____
_____	_____
_____	_____
_____	_____

DAILY INSTRUMENT CALIBRATION CHECK SHEET

DATE	INSTRUMENT	BATTERY CHECK OK?	ZERO ADJUST OK?	CALIBRATION ON GAS (PPM)	READING (PPM)	CALIBRATED BY

FIELD MONITORING ACTIVITY LOG

DATE	ACTIVITY MONITORED	TIME	LOCATION	READING	ACTION	READING BY





Health and Safety Program
PROJECT HAZARD ANALYSIS FORM

Attachment PHA-1

Revision: 02/12/01

Completed by: Shawn Williams

Date: 4/11/01

Project Name: Coos Bay - Phase II

Project #: 52.00082004.00 00001

See SMS #

Determine the applicability of these SMSs to your project

Emergency Action Plan	003
Sanitation	030
Regulatory Inspections	001
Incident reporting	049

Will project activities involve any of the following?

Will project activities involve any of the following?	Yes	See SMS #
Abrasive blasting or exposure to abrasive blasting media or waste?		006
Accident investigation?		049
Aerial lifts?		007
Air contaminants in hazardous concentrations?		043, 042
Asbestos surveys or abatement oversight?		008
Bloodborne Pathogens		051
Boating		027, 053
California job activities?		005
Computer use / ergonomic concerns?		054
Corrosive materials used or handled?		009
Confined space entries?		010
Cranes or hoists?		038, 041
Demolition activities of any type of structures?		011
Drilling	✓	056, 034
Electrical equipment? <ul style="list-style-type: none">• Generators?• Live electrical circuits?		012
Excavations or exposure to excavation hazards?		013
Fall Hazards		040
Flammable or combustible materials used or stored which could constitute a fire hazard?		014, 015
Hand tool use: <ul style="list-style-type: none">• Portable• Gas powered• Electric• Powder actuated		016
Hazardous materials shipping		048
Hazardous substances – physical, chemical or health hazards?	✓	002



Health and Safety Program
PROJECT HAZARD ANALYSIS FORM

Attachment PHA-1

Revision: 02/12/01

Will project activities involve any of the following?	Yes	See SMS #
Hazardous waste activities (investigative or remedial)?	✓	017
Heat Stress potential to employees working in: <ul style="list-style-type: none">• Hot environments; or• Impermeable Chemical Protective Clothing?		018
Heavy equipment in use at this project site?	✓	019
Hot Work (welding, cutting, grinding)		020
Industrial site access of any kind?		004
Lead exposures (lead paint removal, lead in dust, etc)?		022
Lockout/tagout to control exposure to hazardous energy?		023
Manbasket (Crane Suspended Personnel Platforms) for working at heights?		037, 038, 041
Marine Safety and Boat Operations		053
Medical Surveillance requirements? Examples would include exposures to: <ul style="list-style-type: none">• Noise• Asbestos• Lead• Hazardous Wastes• High Altitude• Carcinogens• Respirator Use	✓	024
Noise exposures?	✓	026
Nuclear Density Gauge Use		044
Portable ladder use?		028
Personal protective equipment?	✓	029
Radiation		052
Respiratory protection use – required and/or voluntary?	✓	042
Scaffolding?		031
Sewer Entry		010
Subcontractors?	✓	046
Traffic control due to work in streets and/or roadways?		032
Travel to remote locations and/or developing countries?		036
Utility Clearances – overhead or underground?	✓	034
Unexploded Ordnance/Chemical Warfare agents present or potential?		039
Underground Storage Tank investigation, removal, etc.	WAM	033
Water, work over or around?	✓	027
Work at altitudes greater than 7,000 feet (~ 2,100 meters)		035
Working at heights of greater than 6 feet without protective measures such as guard rails?		040

URS SAFETY MANAGEMENT STANDARD

Inspections by Regulatory Agencies

1. Applicability

This program applies to URS office and field operations.

2. Purpose and Scope

Representatives of regulatory agencies may have statutory authority to evaluate URS operations for compliance with health and safety regulations. URS personnel are to cooperate with all such inspections. This procedure provides guidelines for responding to the inspector and for documenting inspection activities.

3. Implementation

Office Locations Implementation of this procedure is the responsibility of the Office Manager.

Field Activities Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

A. Obtaining Positive Identification

Request formal identification (photo identification card) from any regulatory agency representative. Call the agency if there is any question regarding the identity of the individual (independently obtain the agency's number; don't use a number provided by the representative). Obtain a business card from the inspector for URS records.

B. Warrants

Do not require an inspector to obtain a warrant prior to conducting an inspection.

C. Health and Safety Notification

Contact the local URS Health and Safety Representative or URS Health and Safety Manager immediately upon confirming the identification of the representative.

D. Opening Conference

1. Request an opening conference if one is not initiated by the inspector.

URS SAFETY MANAGEMENT STANDARD

Inspections by Regulatory Agencies

2. Use the opening conference to determine why the inspector is conducting the inspection.
3. Take good notes during the conference.

E. Inspection Activities

1. Escort the inspector at all times, taking him/her directly to the area of interest.
2. Answer all questions honestly, but do not volunteer information.
3. Do not argue with or attempt to mislead the inspector.
4. Resolve violative conditions immediately, while the representative is on site, if possible.
5. Make sure the inspector has appropriate qualifications to enter high hazard areas.
6. Take good notes during the inspection and take pictures where the inspector takes pictures.
7. Inspectors generally have the right to interview employees if they do not interrupt operations.

F. Closing Conference

1. Request a closing conference if one is not initiated by the inspector.
2. Use the closing conference to determine what regulatory violations the representative found, if any.
3. Do not try to negotiate during the closing conference.
4. Take good notes during the conference.

G. Post-Inspection Activities

1. Immediately contact URS Health and Safety Manager and communicate the results of the inspection. The URS Health and Safety Manager will provide additional instructions regarding the inspection.
2. Debrief any employees who were contacted by the representative; all discussions should be reduced to notes.

URS SAFETY MANAGEMENT STANDARD

Inspections by Regulatory Agencies

3. All follow-on activities associated with the inspection will be coordinated by the Group Health and Safety Manager and appropriate legal counsel. Local URS employees are not to conduct any follow-on activities without the express consent of the URS Health and Safety Representative.

5. Documentation Summary

Provide the following documents to the URS Health and Safety Manager:

- A. Inspector's business card.
- B. All materials provided by the inspector.
- C. All notes relating to the inspection, opening conference, closing conference, and debriefings.
- D. All photos from the inspection, with explanatory notes.

6. Resources

U.S. OSHA - Field Inspection Reference Manual

URS SAFETY MANAGEMENT STANDARD

Worker Right-to-Know (Hazard Communication)

1. Applicability

This procedure applies to URS office and field operations.

2. Purpose and Scope

The worker right-to-know program provides URS personnel with information and training about safety and health hazards associated with the chemicals they might encounter in the workplace. This procedure describes how chemical safety hazards are communicated to URS personnel working in offices and at field site locations, and how information is to be provided to employees of other employers working at the location. The requirements include steps to acquire this information, maintain it, and train everyone to use it.

3. Implementation

Office Locations: Implementation of this program is the responsibility of the Office Manager.

Field Activities: Implementation of this program is the responsibility of the Project Manager.

4. Requirements

A. Hazardous Material Inventory

1. Maintain a hazardous material inventory that lists all of the hazardous materials used at this workplace. Use chemical names consistent with the applicable MSDS's.
2. File a copy of the chemical inventory in the Safety Filing System.

B. Material Safety Data Sheets (MSDS's)

1. Obtain a MSDS for each chemical before it is used.
2. Review each MSDS when it is received to evaluate whether the information is complete and to determine if existing protective measures are adequate.
3. Maintain a collection of all MSDS's where they are accessible at all times.

URS SAFETY MANAGEMENT STANDARD
Worker Right-to-Know (Hazard Communication)

4. Replace MSDS sheets when updated sheets are received.
Communicate any significant changes to those who work with the chemical.
5. MSDS's are required for all hazardous materials used on site by project personnel.

C. Labels

Label all chemical containers with:

1. Identity of the hazardous chemical(s),
2. Appropriate hazard warnings, and
3. Name and address of the chemical manufacturer, importer, or other responsible party.

D. Hazardous Nonroutine Tasks

Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, provide each employee with information about hazards to which they may be exposed during such an activity.

This information will include:

1. Specific chemical hazards.
2. Protective/safety measures which must be utilized.
3. Measures that have been taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures.

E. Informing Contractors/Subcontractors

Provide contractors/subcontractors the following information on chemicals used by or provided to URS personnel:

1. Names of hazardous chemicals to which they may be exposed while on the jobsite.
2. Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures.

URS SAFETY MANAGEMENT STANDARD
Worker Right-to-Know (Hazard Communication)

3. Location of URS MSDS's and written chemical inventory.

F. Training

1. Conduct training of all employees potentially exposed to hazardous materials on the following schedule:
 - a. Before new employees begin their jobs.
 - b. Whenever new chemicals are introduced into the workplace,
or
 - c. Annually thereafter.
2. This training will include:
 - a. Applicable regulatory requirements.
 - b. Names of those responsible for implementing this program.
 - c. Location of the program, inventory and MSDS 's.
 - d. Chemicals used, and their hazards (chemical, physical and health).
 - e. How to detect the presence or release of chemicals.
 - f. Safe work practices.
 - g. How to read an MSDS.
3. Document the training.

5. Documentation Summary

- A. File these records in the Office Safety Filing System
 1. Chemical Inventory.
 2. Location of the MSDS inventory.
 3. Training records.
 4. Contractor/Subcontractor notifications.
- B. File these records in the Project Safety File.

URS SAFETY MANAGEMENT STANDARD
Worker Right-to-Know (Hazard Communication)

1. Chemical Inventory.
2. Location of the MSDS inventory.
3. Training records.
4. Contractor/Subcontractor notifications.

6. Resources

- A. U.S. OSHA Technical Links - Hazard Communication
(<http://www.osha-slc.gov/SLTC/hazardcommunications/index.html>)
- B. U.K. - Control of Substance Hazardous to Health - Regulations

URS SAFETY MANAGEMENT STANDARD

Emergency Action Plans

1. Applicability

This procedure applies to URS office and field operations.

2. Purpose and Scope

This procedure establishes policy, assigns responsibilities, and provides guidance to URS offices/field projects regarding emergency action. It includes general information on actions to be taken by URS management and employees in the event of a fire or other emergency that may endanger life or property.

The objectives of this procedure are to:

- A. Promote a fast, effective reaction in coping with emergencies.
- B. Save lives and avoid injuries and panic.
- C. Restore order and conditions back to normal levels with a minimum of confusion and as promptly as possible.

3. Implementation

Office Locations- Implementation of this program is the responsibility of the Office Manager.

Field Activities- Implementation of this program is the responsibility of the Project Manager.

4. Requirements

A. Emergency Action Plan Development

1. Gather Information

Each URS office/project must develop an emergency Action Plan tailored to its specific situation. Office Managers will check with their building manager or landlord regarding evacuation procedures they may have in place and incorporate these procedures into the emergency Action Plan. Project EAPs must comply with client requirements and specifications. The Plan must contain the following:

- a. Reporting Fires and Other Emergencies

URS SAFETY MANAGEMENT STANDARD

Emergency Action Plans

Describe the procedures that personnel should follow to report emergencies. List emergency telephone numbers for fire, paramedics and police. Include local prefixes on emergency numbers, if required, such as 9-911.

b. Alarm System

Describe the emergency alarm system for the building/site as applicable. Include the description and location of fire alarm pull boxes, and visual and audible alarms. If a public address (PA) system is used to notify occupants of emergencies, include the procedures to activate the PA system, such as calling the receptionist or building manager's office, and a description of the announcements that will be made.

c. Evacuation Routes and Procedures

Develop a map or description of the evacuation routes and emergency exits to be use. A description of the building emergency lighting system and exit signs may also be included. Evacuation route maps may be posted in the offices. There should be a primary and alternate evacuation route and exit from each work area.

Describe procedures regarding the use of elevators, if applicable. In most cases elevator use is prohibited during an emergency. The building manager should be consulted for these procedures.

Include procedures to determine that no employees have been inadvertently left behind.

d. Critical Equipment/Operations Procedures

Designate personnel responsible for shutting down critical equipment and the procedures for doing so, if applicable.

e. Assisting Disabled Personnel

Describe the provisions that have been made for notifying and assisting personnel with disabilities during an emergency. Such provisions are to accommodate personnel in wheelchairs or those who are temporarily disabled, such as personnel on crutches.

URS SAFETY MANAGEMENT STANDARD

Emergency Action Plans

f. Personnel Accounting Procedures

Designate a primary and alternate assembly area for personnel who are evacuating. Require sufficient distance so that personnel will not be exposed to fire or debris hazards, or traffic, nor interfere with emergency responders.

Designate an individual and an alternate with the assigned responsibility for taking a headcount in the assembly area and reporting missing personnel to emergency responders.

Define the procedures on how employees will be informed that it is safe to re-enter the building or to leave for home.

g. Rescue and Medical Duties

Include the statement that "URS does not expect or encourage its employees to engage in firefighting, medical treatment, rescue, or other emergency response. Such activities should only be performed by properly equipped and trained emergency responders. URS recognizes that some of its personnel may have received training in first aid and cardiopulmonary resuscitation (CPR) and may wish to perform these duties on injured personnel."

B. Posting

1. Post the Emergency Action Plan where it is available to all employees.
2. Post evacuation maps at all exits and points of egress.

C. Training

Train all employees regarding the requirements of the Emergency Action Plan.

5. Documentation Summary

A. Office

File these records in the Office Safety Filing System:

1. Emergency Action Plan

URS SAFETY MANAGEMENT STANDARD
Emergency Action Plans

2. Evacuation Maps

3. Training records

B. Field

File these records in the Project Safety File.

1. Emergency Action Plan

2. Evacuation Maps

3. Training records

6. References

A. U.S. OSHA Standard - Emergency Action Plans - 29 CFR 1910.38

B. U.S. OSHA Fact Sheet - Responding to Workplace Emergencies

URS SAFETY MANAGEMENT STANDARD

Fire Prevention

1. Applicability

This procedure applies URS office and project locations.

2. Purpose and Scope

The purpose of this procedure is to reduce/eliminate potential fire hazards in the workplace and to provide for a rapid, effective response should a fire occur.

3. Implementation

Office Locations – Implementation of this procedure is the responsibility of the Office Manager.

Field Activities – Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

General

- A. Develop an Emergency Action Plan as outlined in SMS 3, "Emergency Action Plans."
- B. Maintain good housekeeping to reduce fire hazards and to provide safe routes of egress should a fire occur.
- C. Provide the appropriate number and types of fire extinguishers for the operations being performed. Refer to Attachment 14-1 for guidance.
- D. Inspect fire extinguishers monthly and maintain an inspection log.
- E. Conduct frequent periodic inspections to identify fire hazards such as:
 - 1. Unnecessary accumulation of combustibles.
 - 2. Unnecessary storage of flammables.
 - 3. Sources of ignition (e.g., faulty wiring, sparks, open flame, etc.).
- F. Remove all fire hazards promptly.
- G. Prohibit smoking and other ignition sources in flammable storage and other fire hazard areas.

URS SAFETY MANAGEMENT STANDARD

Fire Prevention

- H. Post emergency numbers near telephones and evacuation maps in appropriate locations.
- I. Conduct evacuation drills.
- J. Train employees in:
 - 1. Fire hazard recognition.
 - 2. Fire hazard prevention.
 - 3. Fire extinguisher use.
 - 4. Emergency and evacuation procedures.

6. Documentation Summary

File the following in the Office/Project Health and Safety File:

- A. Emergency Action Plans.
- B. Fire extinguisher inspection logs.
- C. Employee training documentation.
- D. Site audits.
- E. Evacuation drills.

7. Resources

- A. U.S. OSHA Standard - Means of Egress - 29 CFR 1910, Subpart E
- B. U.S. OSHA Standard - Employee Emergency Plans and Fire Prevention Plans - 29 CFR 1910.38
- C. U.S. OSHA Standard - Fire Protection - 29 CFR 1910, Subpart L
- D. U.S. OSHA Technical Links - Fire Safety
- E. U.S. OSHA Construction Standard - Fire Protection and Prevention 29 CFR 1926, Subpart F
- F. U.K. - "Fire Precaution" Regulations

URS SAFETY MANAGEMENT STANDARD
Fire Prevention

- G. Australian Standards AS 1851.1-1995 - Maintenance of Fire Protection Equipment - Portable Fire Extinguishers and Blankets
- H. Australian Standards Collection 15 - Fire Extinguishing Equipment
- I. USACE EM 385-1-1 Section 9 - Fire Prevention and Protection
- J. Attachment 14-1 - Fire Extinguisher Placement Guidelines

**FIRE EXTINGUISHER
PLACEMENT GUIDELINES****1. Fire Extinguishers – General**

The following are **minimum** requirements for fire extinguisher placement in office buildings, construction facilities, support buildings, and/or buildings under construction. In some cases, client requirements may be more stringent, in which case the client's requirements supercede the guidelines below.

- A. A fire extinguisher, rated at a minimum of 2A, must be provided for each 3,000 square feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.
- B. At least one fire extinguisher, rated at a minimum of 2A, must be provided on each floor. In multi-story buildings, at least one fire extinguisher must be located adjacent to the stairway.
- C. Where more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used, a fire extinguisher, rated at least 10B, must be provided within 50 feet.
- D. Portable fire extinguishing equipment, suitable for the fire hazard involved, must be provided at convenient, conspicuously accessible locations in Yard Storage areas. Portable fire extinguishers, rated at least 2A, shall be placed so that maximum travel distance to the nearest unit does not exceed 100 feet.

2. Flammable/Combustible Liquid Storage

The following are **minimum** requirements for fire extinguisher placement in flammable/combustible liquid and gas storage areas. In some cases, client requirements may be more stringent, in which case the client requirements supercede the guidelines below. Refer to SMS 15, "Flammable and Combustible Liquids and Gases, Attachment 15-2".

- A. At least one portable fire extinguisher, rated at least 20B, must be located outside of, but not more than 10 feet from, the door opening into any room used for storage of more than 60 gallons of flammable or combustible liquids.
- B. At least one portable fire extinguisher, rated at least 20B, must be located not less than 25 feet, nor more than 75 feet, from any flammable liquid storage area located outside.



**FIRE EXTINGUISHER
PLACEMENT GUIDELINES**

- C. At least one portable fire extinguisher, rated at least 20BC, must be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable/combustible liquids.
- D. At least one fire extinguisher, rated at least 20BC, must be provided within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication/service areas.
- E. At least one fire extinguisher, rated at least 20BC, must be provided at each LPG container storage area.

3. Hot Work

A minimum of one fire extinguisher, rated at least 20BC, must be provided for each hot work location. The extinguisher should be conspicuously positioned no more than 10 feet from the hot work. Refer to SMS 20, "Hot Work".

URS SAFETY MANAGEMENT STANDARD

Hazardous Waste Operations

1. Applicability

This standard applies to URS field operations involving the investigation or remediation of sites impacted with hazardous wastes or hazardous materials including those associated with underground storage tanks.

Investigation projects for real estate transactions conducted to confirm that a site is "clean" are not covered under this standard. Reference related Safety Management Standards for such operations.

2. Purpose and Scope

The purpose of this standard is to provide guidance designed to minimize hazardous chemical exposures to URS personnel while URS is conducting hazardous waste field operations.

Investigation techniques included under this standard include, but are not limited to, hand auger, soil gas evaluation, test pits, and all types of power drilling, including direct push. Remediation techniques included under this standard include, but are not limited to, excavation, groundwater treatment, soil gas treatment, containment, and landfarming and similar insitu methods.

3. Implementation

Field Activities - Implementation of this procedure is the responsibility of the Project Manager or Superintendent.

4. Requirements

A. Project Evaluation

Assess the technical and field aspects of every hazardous waste site project to evaluate:

1. Risk of exposure to hazardous chemicals, with particular attention to suspected or known human carcinogens.
2. Personal protective equipment requirements.
3. Air monitoring requirements.
4. Emergency services requirements.
5. Hazards addressed by other URS Safety Management Standards.

URS SAFETY MANAGEMENT STANDARD

Hazardous Waste Operations

6. Logistical considerations, such as access, distance from population centers.
7. Other safety and health hazards associated with site operations.

B. Client/Contract Evaluation

1. Review contract documents to determine whether the client has any special internal or regulatory requirements for hazardous waste site operations.
2. Implement client requirements in addition to those of this standard. Those requirements that are the most protective (e.g., most stringent) will be used.

C. Site-specific Health and Safety Plan

1. Prepare a site-specific Health and Safety Plan (HSP) for every project under this standard.
2. HSPs must be written or reviewed by a URS Health and Safety Regional Health and Safety Manager (RHSM) or a safety professional specifically approved by the RHSM.
3. Evaluate client and agency requirements prior to preparing the HSP, particularly if the client or an agency will approve the HSP prior to implementation.

D. Training

Verify that each assigned URS employee has completed required training. In general, the following are required for operations within North America:

1. 40-hours of initial training from an approved training provider.
2. 3-days of on-the-job training.
3. 8-hours of refresher training completed within 12 months of the initial or subsequent refresher training.
4. 8-hours of Site Safety Officer (Supervisor) training for directing the activities of any other URS employee.
5. Additional training for the Site Safety Officer as described below.

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E. Site Safety Officer

1. Appoint a Site Safety Officer (SSO) with appropriate qualifications for the specific hazardous waste project.
2. Assure that the SSO for complex projects, such as those with complicated remediation activities, has no duties other than site safety and health.
3. Verify that the SSO has completed basic supervisor training, and has additional required training and experience as applicable:
 - a. Advanced respiratory protection training is required for projects where supplied air respirators may be used.
 - b. Heavy equipment/construction safety.
 - c. Personal air monitoring.

F. Exposure Monitoring

- Require that exposure monitoring is conducted in accordance with the HSP on all hazardous waste projects.

G. Project Equipment

1. Provide all health and safety equipment as described by the project Health and Safety Plan.
2. Provide all personal protective equipment as described by the project Health and Safety Plan.

H. Medical Surveillance

Verify that each URS employee assigned to the project meets the minimum requirements of the URS Medical Surveillance Program. This typically includes:

1. Baseline examination.
2. Annual examination.
3. Appropriate clearance for respirator use.

5. Documentation Summary

URS SAFETY MANAGEMENT STANDARD

Hazardous Waste Operations

In the Project Safety File:

- A. Completed Health and Safety Plan.
- B. Completed and signed HSP approval form.
- C. Signed HSP acceptance form.
- D. Completed H&S field forms that are included in each HSP.
- E. Training and Medical Surveillance Clearance documentation for project personnel.

6. Resources

- A. U.S. OSHA Technical Links - Hazardous Waste Operations

The following documents are PDF files which must be read with Adobe Reader:

- B. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities - NIOSH 85-115
- C. USACE EM 385-1-1 - Hazardous, Toxic and Radioactive Waste

URS SAFETY MANAGEMENT STANDARD **Heavy Equipment Operations**

1. Applicability

This procedure applies to URS field projects where heavy equipment is in operation.

2. Purpose and Scope

The purpose of this procedure is to require that heavy equipment is operated in a safe manner, that the equipment is properly maintained and that ground personnel are protected.

3. Implementation

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

A. Authorized Operators

1. Evaluate operators through documentable experience (resume) and a practical evaluation of skills.
2. Allow only qualified operators to operate equipment.
3. Prohibit equipment from being operated by any personnel who have not been specifically authorized to operate it.
4. Maintain a list of operators for the project and the specific equipment that they are authorized to operate.
5. Require operators to use seat belts at all times in all equipment and trucks.
6. Brief operators on the following rules of operation:
 - a. Operators are in control of their work area.
 - b. Equipment will be operated in a safe manner and within the constraints of the manufacturer's Operation Manual.
 - c. Operators will stop work whenever unauthorized ground personnel or equipment enter their work area and only resume work when the area has been cleared.

URS SAFETY MANAGEMENT STANDARD

Heavy Equipment Operations

B. Ground Personnel

1. Require that ground personnel on the site have received training and comply with the following rules of engagement:
 - a. All ground personnel must wear orange protective vests when in work areas with any operating equipment.
 - b. Ground personnel will stay outside of the swing zone or work area of any operating equipment.
 - c. Ground personnel may only enter the swing or work area of any operating equipment when:
 1. They have attracted the operator's attention and made eye contact.
 2. The operator has idled the equipment down and grounded all extensions.
 3. The operator gives the ground personnel permission to approach.
 - d. Ground personnel shall never walk or position themselves between any fixed object and running equipment or between two running pieces of equipment.

C. Equipment

1. Maintain operations manuals at the site for each piece of equipment that is present on the site and in use.
2. Require that operators are familiar with the manual for the equipment and operate the equipment within the parameters of the manual.
3. Require that all equipment is provided with roll-over protection systems (ROPS). Tracked excavators are exempt from ROPS requirements but must have a cab which provides protection from overhead hazards
4. Verify that seatbelts are present and functional in all equipment.

URS SAFETY MANAGEMENT STANDARD

Heavy Equipment Operations

5. Prohibit the use of equipment which has cab glass which is cracked, broken or missing.
6. Require that backup alarms are functional on all trucks and equipment. Tracked excavators must have bidirectional alarms or the operator must be provided with a spotter whenever tracking in either direction.
7. Require all extensions such as buckets, blades, forks, etc. to be grounded when not in use.
8. Require brakes to be set and wheels chocked (when applicable) when not in use.

D. Inspection and Maintenance

1. Require daily inspections of equipment by operators using Attachment 19-1.
2. Prohibit use of equipment deemed to be unsafe as a result of daily inspection until required repairs or maintenance occur.
3. Conduct maintenance as prescribed by the manufacturer in the Operations Manuals for each piece of equipment.
4. During maintenance/repair, require that:
 - a. Motors are turned off.
 - b. All extensions are grounded or securely blocked.
 - c. Controls are in a neutral position.
 - d. Brakes are set.

5. Documentation Summary

File the following documents in the Project Health and Safety File.

- A. List of authorized operators.
- B. Operator qualifications.
- C. Daily Equipment Inspection Logs.

URS SAFETY MANAGEMENT STANDARD
Heavy Equipment Operations

- D. Site Briefing documentation for operator rules and ground personnel "rules of engagement".

6. Resources

- A. U.S. OSHA Standard - Motorized Vehicles and Mechanized Equipment - 29 CFR 1926, Subpart O
- B. National Association of Demolition Contractors – Safety Manual (<http://www.demolitionassociation.com/>)
- C. Queensland Workplace Health and Safety - Competency Standard for Users & Operators of Industrial Equipment
- D. Attachment 19-1 - Equipment Inspection Form



**FIELD FIRST AID KIT
SUPPLY LIST**

- Portable, plastic or metal, water resistance first aid kit, with handle
- Bloodborne pathogens personal protective equipment kit (minimum requirements are latex gloves and CPR shield)
- First aid manual
- Ace bandage 3"
- Assorted band aids
- Sterile gauze pads 4" x 4"
- Sterile non-stick gauze pads 2" x 3"
- Paper tape (hypo-allergenic)
- Burn ointment (for minor burns, use after cold water soak)
- Antibiotic ointment (Neosporin or generic)
- Alcohol prep pads
- Iodine prep pads (if not allergic to iodine, use after soap and water wash for bloodborne exposure)
- Ice pack
- Gauze roll 2"
- Butterfly strips (wound closure)
- Tweezers (one use, disposable)
- Temperature strips
- Flashlight
- Triangular bandage
- Bandage scissors
- Sterile normal saline eye wash, 4 ounce bottle
- Ammonia inhalant ampoules
- Insect sting relief wipes or spray

URS SAFETY MANAGEMENT STANDARD

Noise and Hearing Conservation

1. Applicability

This procedure applies to URS Corporation facilities and field operations where URS Corporation personnel may encounter noise exposures that may exceed 85 dBA as an 8 hour Time Weighted Average.

2. Purpose and Scope

The purpose of this procedure is to protect employees from hazardous noise exposures and to prevent hearing loss.

3. Implementation

Office/Lab locations: High noise is unlikely to be encountered at URS offices, however, if applicable, the implementation of this program is the responsibility of the Office Manager.

Field Activities: Implementation of this program is the responsibility of the Project Manager.

4. Requirements

A. General

The use of hearing protectors in any location where powered or motorized equipment or any other noise source could reasonably be expected to exceed 85 dBA. Use of hearing protectors may only be discontinued when noise levels are verified to be less than 85 dBA through a properly conducted noise survey. Whenever information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, the project manager or location manager will be responsible to enforce the proper use of hearing protectors.

B. Hearing Protectors

1. Require that at least two (2) types of hearing protectors are available to employees free of charge, preferably a plug and a muff type.
2. Minimum Noise Reduction Ratings (NRR)

Hearing protectors issued must have the following minimum NRR:

Ear Plug	Muffs
29 dBA	27 dBA

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Noise and Hearing Conservation

3. Require that hearing protectors are used and thus effectively protect hearing.

C. Noise Surveys

1. Noise surveys must be conducted in a manner that reasonably reflects the exposure of the affected employees. Surveys must be conducted under the supervision of a URS Safety Program Representative.
2. Sound level meters and audio dosimeters used to determine employee exposure to noise sources must be Type II (accurate to within ± 2 dBA), operated in "slow" response, on the "A" scale, and be calibrated to factory guidelines (including periodic factory recalibration).

D. Noise Controls

Eliminate noise sources to the extent possible. Examples of controls that must be considered follow:

1. Addition or replacement of mufflers on motorized equipment.
2. Addition of mufflers to air exhausts on pneumatic equipment.
3. Following equipment maintenance procedures to lubricate dry bearings.
4. Isolation of loud equipment with newer and quieter models.

E. Audiometric Exams

1. Tests

Details on the medical surveillance program (including audiometric testing) are included in SMS 24.

Audiometric tests shall be performed by a person meeting OSHA's 1910.95 (g)(3)'s definition. Within 6 months of an employee's first exposure at or above the action level, a valid baseline audiogram shall be established against which subsequent audiograms can be compared. Testing to establish a baseline audiogram shall be preceded by 14 hours without exposure to noise. Hearing protectors may be used as a substitute for the requirement that

URS SAFETY MANAGEMENT STANDARD

Noise and Hearing Conservation

baseline audiogram shall be preceded by 14 hours without exposure to workplace noise. The medical surveillance provider shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination. For multi-year projects, an annual audiogram shall be obtained for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.

Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if there is a standard threshold shift (STS). If the annual audiogram shows that an employee has suffered a standard threshold shift, the employer will obtain a retest within 30 days and consider the results in assessing an STS as the annual audiogram. The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. If an STS has occurred, the medical surveillance provider will notify the employee within 21 days of the determination.

2. Standard Threshold Shifts

If an employee's test results show a confirmed STS, their hearing protection will be evaluated and refitted, and a medical evaluation may be required.

F. Training

Verify that each employee who must work in a noisy environment is current on the required Hearing Conservation Training. Training must include the following topics:

1. The effects of noise on hearing.
2. The purpose of hearing protectors.
3. The advantages and disadvantages of various types of hearing protectors.
4. The attenuation of various types of hearing protection.
5. The selection, fitting, care, and use of hearing protectors.
6. The purpose of audiometric testing.

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Noise and Hearing Conservation

7. An explanation of the audiometric testing procedure.

5. Documentation Summary

- A. File these records in the Office Safety Filing System:
 1. Noise surveys, when applicable.
 2. Training Records.
- B. File noise surveys, when applicable, in the Project Safety File:

6. Resources

- A. U.S. OSHA Standard – Occupational noise exposure – 29 CFR 1910.95
- B. U.S. OSHA Construction Standard – Occupational noise exposure – 29 CFR 1926.52
- C. U.S. OSHA Technical Links - Noise and Hearing Conservation
- D. American Industrial Hygiene Association: The Occupational Environment – Its Evaluation and Control, Chapter 20. Fairfax, VA: 1997
- E. National Hearing Conservation Association web site
- F. URS SMS 24 Medical Screening and Surveillance

URS SAFETY MANAGEMENT STANDARD **Work Over Water**

1. Applicability

This procedure applies to URS projects where personnel will work above or immediately adjacent to water where a drowning hazard exists. Refer to SMS 053, "Marine Safety and Boat Operations."

2. Purpose and Scope

This procedure is intended to protect employees from drowning while working above or adjacent to water.

3. Implementation

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

A. Review the project in the planning phase to determine if any work will occur above or immediately adjacent to water where a drowning hazard exists. In general, a risk of drowning (ROD) is present when:

1. Employees perform work on or under bridges without constant protection from falling into the water, or
2. Working surfaces at riverbanks slope so steeply that an employee could slip or fall into the water when no portable protection (like roping off) is used.

NOTE: Employees working on or under bridges who are constantly protected by guardrail systems, nets, or body belt/harness systems are deemed to be adequately protected from the danger of drowning and are not required to wear life jackets or buoyant work vests.

B. If any activities pose a risk of drowning do the following during the activity:

1. Provide employees with an approved (USCG for U.S. operations) life jacket or buoyant work vest. Employees should inspect life jackets or work vests daily before use for defects. Do not use defective jackets or vests.
2. Post ring buoys with at least 90 feet (27 meters) of line next to the work area. If the work area is large, post extra buoys 200 feet (60 meters) or less from each other.

URS SAFETY MANAGEMENT STANDARD

Work Over Water

3. Provide at least one life saving skiff, immediately available at locations where employees are working over or adjacent to water. Require that the skiff is in the water and capable of being launched by one person and is equipped with both motor and oars.
4. Designate at least one employee on site to respond to water emergencies and operate the skiff at times when there are employees above water.
 - a. If the designated skiff operator is not within visual range of the water, provide him or her with a radio or provide some form of communication to inform them of an emergency.
 - b. Designated employee should be able to reach a victim in the water within three to four minutes.
5. Require that at least one employee trained in CPR and first aid is on site during work activities.

5. Documentation Summary

Records required in the Project Safety File:

Copy of the fall protection plan designed for work activities – (as necessary)

6. Resources

- A. U.S. OSHA Standard - Working Over or Near Water - 29 CFR 1926.106
- B. U.K. - (Health, Safety & Welfare) Regulations

URS Safety Management Standard **Personal Protective Equipment**

1. Applicability

This program applies to URS Corporation laboratory and field operations where the use of Personal Protective equipment (PPE) is warranted. Refer to SMS 42, "Respiratory Protection", for respiratory hazards. Hearing Protection issues are additionally addressed in SMS 26, "Noise and Hearing Conservation."

2. Purpose and Scope

This procedure provides information on recognizing those conditions that require personal protective equipment as well as selecting personal protective equipment for hazardous activities.

3. Implementation

Shop/Lab Locations - Implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

4. Requirements

- A. Perform hazard assessments for those work activities that are likely to require the use of PPE.
 - 1. Use Attachment 29-1 to perform the assessment.
 - 2. Reevaluate completed hazard assessments when the job changes.
- B. Eliminate the hazards identified in Attachment 29-1, if possible, through engineering or administrative controls.
- C. Select PPE that will protect employees if hazards cannot be eliminated.
 - 1. See Attachment 29-1 for recommended PPE.
 - 2. Review Material Safety Data Sheets for chemicals used for PPE recommendations.
 - 3. If needed, consult with the URS Health and Safety Representative for assistance in selecting PPE.

URS Safety Management Standard **Personal Protective Equipment**

- D. Provide required PPE to employees free of charge (excluding in some instances components of standard work attire such as steel-toed boots), assuring that it fits properly giving them a choice if more than one type is available.
- E. Whenever a hazard is recognized, and PPE is required, the employees will be provided with the appropriate PPE. However, when a PPE is not required, and the employee selects to wear his or her own PPE, the project manager shall ensure that the employee is properly trained in the fitting, donning, doffing, cleaning, and maintenance of his or her employee owned equipment.
- F. Conduct and document employee training.
 - 1. Train all employees who are required to wear PPE.
 - 2. Require that training includes:
 - a. When PPE is necessary to be worn.
 - b. What PPE is necessary.
 - c. How to properly don, doff, adjust and wear PPE.
 - d. Limitations of PPE
 - e. Proper care, maintenance, useful life and disposal of PPE.
 - 3. Training must be conducted before PPE is assigned.
 - 4. Refresher training is needed when:
 - a. New types of PPE are assigned to the worker.
 - b. Worker cannot demonstrate competency in PPE use.
 - 5. Keep written records of the employees trained and type of training provided, including the date of training.
- G. Maintain Protective Equipment
 - 1. Check personal protective equipment for damage, cracks, and wear prior to each use. Replace or repair equipment not found in good condition.

URS Safety Management Standard **Personal Protective Equipment**

2. Wash off contaminated protective equipment with water and mild soap, if necessary, to prevent degradation of the equipment.
- H. Periodically inspect worksites where employees are using personal protective equipment, using Attachment 29-2.
 1. Field activities – inspect work sites at least monthly.
 2. Office locations – inspect work sites semi-annually.

5.0 Documentation Summary

- A. Records required in the Project Safety File:
 1. Completed Hazard Assessment Certification Forms (Attachment 29-1)
 2. Completed Personal Protective Equipment Inspection Sheet (Attachment 29-2)
 3. Documentation of employee training.
- B. Records required in the Laboratory Safety Filing System:
 1. Completed Hazard Assessment Certification Forms (Attachment 29-1)
 2. Completed Personal Protective Equipment Inspection Sheet (Attachment 29-2)
 3. Documentation of employee training.

6.0 Resources

- A. U.S. OSHA Standards - Personal Protective Equipment -29CFR 1910 Subpart I
(<http://www.osha-slc.gov/SLTC/lead/index.html>)
- B. U.S. OSHA Construction Standard - Personal Protective Equipment –29 CFR 1926 Subpart E
(http://www.osha-slc.gov/OshStd_toc/OSHA_Std_toc_1926_SUBPART_E.html)
- C. U.S. OSHA Technical Links - Personal Protective Equipment
(<http://www.osha-slc.gov/SLTC/personalprotectiveequipment/index.html>)

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- D. Australian Standards SAA HB9-1994 - Occupational Personal Protection
- E. American National Standards Institute, ANSI Z89.1-1986, Protective Headwear
(http://www.ansi.org/cat_top.html)
- F. American National Standards Institute, ANSI Z87.1 - 1989, Eye and Face Protection
(http://www.ansi.org/cat_top.html)
- G. American National Standards Institute, ANSI Z41.1 - 1991, Foot Protection
(http://www.ansi.org/cat_top.html)
- H. SMS 40 - Fall Protection
- I. Attachment 29-1 Hazard Assessment Form
- J. Attachment 29-2 PPE Inspection Form

URS SAFETY MANAGEMENT STANDARD

Sanitation

1. Applicability

This procedure applies to URS field operations.

2. Purpose and Scope

The purpose of this program is to provide employees on field assignments with appropriate personal hygiene facilities, including toilets, wash rooms and eating facilities, and to protect employees from unsanitary conditions.

3. Implementation

Field Activities - Implementation of this program is the responsibility of the Project Manager.

4. Requirements

A. Arrange for the installation of adequate toilet and wash facilities during the planning stage of field projects. Note: Mobile crews having transportation readily available to nearby toilet facilities need not be provided with facilities.

1. Provide job sites without sanitary sewer with one of the following:

- a. Privies (where their use will not contaminate ground or surface water).
- b. Chemical toilets.
- c. Combustion toilets.

2. Provide toilets for employees of each sex at field sites according to the following ratio:

Number of Employees	Minimum # of water closets (1)
1 - 15	1
16 - 25	2
36 - 55	3
56 - 80	4
81 - 110	5
111 - 150	6
Over 150	(2)

URS SAFETY MANAGEMENT STANDARD Sanitation

Footnote (1) where toilet facilities will not be used by women, urinals may be provided instead of the minimum specified.

Footnote (2) 1 additional fixture for each additional 40 employees.

- B. Provide a means for washing hands next to toilet areas.
- C. Arrange for fresh potable water to be available.
 - 1. Fixed Facilities

Require backflow prevention devices, testing and administrative controls to be used for all potable water supply branches.
 - 2. Field Sites
 - a. Require an adequate supply of potable water to be available.
 - b. Water containers must be tightly closed and marked as to the contents. Containers must have a tap and be refilled daily.
- D. Maintain existing toilet and wash facilities.
 - 1. Maintain toilets and toilet area in good repair and in a clean and sanitary condition.
 - 2. Provide paper towels and soap or other suitable sanitizing material for washing hands.
 - 3. Locate hand-washing facilities next to or near toilets.
- E. Maintain availability and cleanliness of drinking water.
 - 1. Maintain backflow devices in a sanitary condition.
 - 2. Water coolers and water dispensers are to be kept in a sanitary condition and filled only with potable water.
 - 3. Provide fountain-type dispensers or one-use cups at each water dispenser.
- F. Maintain lunchrooms in a clean condition.
 - 1. Require microwave ovens to be used for food only.

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Sanitation

2. Require refrigerators that are designated for food storage to be used for food only.
3. Do not allow workers to eat or store foods in areas where toxic materials are handled or stored.
4. Periodically clean lunchrooms.

G. Manage waste generated on site.

1. Release sanitary sewage into sanitary sewer lines or to other proper disposal channels.
2. Do not discharge hazardous waste into the sanitary sewer or storm sewer system.
3. Collect garbage and trash daily.
 - a. Garbage containers located outside buildings should have lids and remained closed. Transport garbage offsite at least weekly.
 - b. At remote field sites where bears and similar wild animals are a hazard, remove garbage from the site daily (do not let garbage remain on site overnight).

H. Prevent pests and vermin from multiplying on site. Eliminate unsanitary conditions that propagate insects or vermin.

- I. Inspect work sites using checksheet provided as Attachment 30-1 for compliance at the beginning of the project and mid -project.

5. Documentation Summary

File completed inspection sheets in the Project Safety File.

6. Resources

- A. U.S. OSHA Construction Standard - Sanitation - 29 CFR 1926.51
(http://www.osha-slc.gov/OshStd_data/1926_0051.html)
- B. U.S. OSHA General Industry Standard - Sanitation - 29 CFR 1910.141
(http://www.osha-slc.gov/OshStd_data/1910_0141.html)

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Sanitation

- C. National Interim Primary Drinking Water Regulations 40 CFR 141
(http://www.access.gpo.gov/nara/cfr/waisidx_99/40cfr141_99.html)
- D. Attachment 30-1 - Sanitation Inspection Checksheet
- E. Queensland Workplace Health and Safety -
Code of Practice for Construction Project Amenities

URS SAFETY MANAGEMENT STANDARD

Utility Clearances And Isolation

1. Applicability

- This procedure applies to URS projects where personnel may encounter subsurface or overhead utilities.

2. Purpose and Scope

Many field activities are conducted near aboveground and underground utilities. The primary purpose of this Standard is to establish operating requirements that will permit employees to work safely in the vicinity of electrical, natural gas, fuel, water, and other utility systems and installations. The secondary purpose is to prevent economic damage to utility systems from operations associated with project-related activities.

The term "utility clearance" includes

- A. The positive locating of utility systems in or near the work area.
- B. A signed statement by an appropriate representative attesting to the location of underground utilities and/or the positive de-energizing (including lockout) and testing of electrical utilities.

Note that in some cases, utility representatives may deem it appropriate or necessary to use insulating blankets to isolate a power line; this is an acceptable alternative to positive de-energizing (only utility representatives can make the determination).

"Contact" with overhead power lines is considered to occur when equipment is closer to power lines than permitted by the criteria in the table in Section 4.0.C.2.b below. (See note for U.K. operations).

3. Implementation

Field Operations - Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

- A. Time for Completion

Complete utility clearances prior to the start of any work in the area of the utility that could feasibly result in contact with or damage to that utility.

- B. Local Regulations

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Utility Clearances And Isolation

Research local codes and regulations regarding utility locating and isolation requirements. Utility companies and locating services are among the appropriate resources.

C. Overhead Power Lines

1. Proximity to Power Lines

No work is to be conducted within 50 feet (15 meters) of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet (15 meters) of overhead power lines without first making this determination.

2. Operations adjacent to overhead power lines are **PROHIBITED unless one of the following conditions is satisfied:**

- a. Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- b. The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked so that no part, including cables, can come within the minimum clearances shown in the table.

MINIMUM DISTANCES FROM POWERLINES	
Powerlines Nominal System kV	Minimum Required Distance
0-50	10 feet (3 meters)
51-100	12 feet (3.6 meters)
101-200	15 feet (4.6 meters)
201-300	20 feet (6.1 meters)
301-500	25 feet (7.6 meters)
501-750	35 feet (10.7 meters)
751-1000	45 feet (13.7 meters)

Note: for U.K. operations, the specific safe distance is determined by the utility company.

- c. The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine

URS SAFETY MANAGEMENT STANDARD

Utility Clearances And Isolation

the minimum safe operating distance; get this determination in writing with the utility representative's signature.

3. All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the Project Manager prior to the start of work.

D. Underground Utilities

1. Do not begin subsurface work (e.g., trenching, excavation, drilling, etc.) until a check for underground utilities and similar obstructions has been conducted. The use of as-built drawings must be confirmed with additional geophysical or other survey.
2. Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
3. Obtain utility clearances for subsurface work on both public and private property. Clearances are to be in writing, signed by the party conducting the clearance.
4. Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
5. Do not conduct mechanical-assisted subsurface work (e.g., powered drill rig, mechanical excavator, etc.) within five (5) feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure. Confirm minimum distances for mechanical-assisted subsurface work with the utility owner, as distances beyond this five foot minimum may be required.
6. Subsurface work within five feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure must be done by hand (e.g., hand auger, shovel) to the point where the obstruction is visually located and exposed. Once the obstruction location is confirmed in this manner, mechanical-assisted work may commence.

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Utility Clearances And Isolation

7. Reference SMS 13, "Excavation Safety" for additional information regarding subsurface operations.

E. Training

Conduct a site briefing for site employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.

5. Documentation Summary

File these records in the Safety Filing System:

1. Documents requesting utility clearance.
2. Documents confirming utility clearance.
3. Training/briefing documentation of each isolation.

6. Resources

1. Utility Locating Services (typically under "Utility" in the Yellow Pages)
2. NIOSH Alert - Preventing Electrocutions from Contact Between Cranes and Power Lines
(<http://www.cdc.gov/niosh/crane.html>)
3. One Call Utility Locating List
(<http://www.underspace.com/refs/ocdir.htm>)
4. National Utility Locating Contractor's Association
(<http://www.underspace.com/nu/index.htm>)
5. U.K. - Health and Safety Executive GS6

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

1. Applicability

This program defines responsibilities and procedures and is applicable to URS operations that may require the use of respiratory protection including Immediately Dangerous to Life and Health (IDLH) and emergency conditions. This program also addresses the voluntary use of respirators.

2. Purpose and Scope

The purpose of this procedure is to protect those employees performing operations for which exposures can not be controlled by use of conventional engineering or administrative controls and prior to establishing a negative air exposure assessment, and to require that respiratory protective equipment is selected, used, maintained, and stored in accordance with acceptable practices.

3. Implementation

Laboratory/Office/Shop Locations - Implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

Program Administration- URS Health and Safety Director is responsible for the development and annual review of this program.

URS Health and Safety Program Representatives are responsible to:

- Assist responsible employees in the implementation of the program.
- Assessing local compliance with the program.

4. Requirements

A. Determine if respirators are needed or going to be used for hazardous jobs before assigning that job to an employee.

1. If the determination is that a potential for respiratory hazards exists with any portion of that job activity then, complete Attachment 42-1.
2. Contact a URS Health and Safety Program Representative if any of the questions in Attachment 42-1 are checked "yes."

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

3. Follow instructions in Attachment 42-2 for employees who wish to voluntarily use dust masks.
 4. Follow all the requirements of this procedure for employees who wish to voluntarily use tight-fitting (e.g., air purifying) respirators.
 5. Required respirators will be paid for by URS and will be provided without cost to the employee.
- B. Select the proper respirator for the job.
1. For those jobs identified in Attachment 42-1, contact a URS Health and Safety Program Representative for assistance in respirator selection.
 2. Contact a URS Health and Safety Program Representative for follow up if there are any problems implementing the recommendations made.
- C. Require employees who will use respirators to be medically qualified before fit testing and assigning them a respirator.
1. For program details, refer to SMS 24, Medical Screening and Surveillance.
 2. Require that employees have a current and accurate Medical Surveillance form (Attachment 24-2)
 3. Obtain a copy of the employee's Health Status Medical Report from the Health and Safety Representative. The consulting occupational physician of the medical service provider following each work related examination issues the Health Status Medical Report. Employees cannot be assigned respirators unless they are medically cleared for respirator use.
- D. Require respirator users to receive appropriate training.
1. All respirator users must be trained:
 - a. Before they are assigned a respirator.
 - b. Annually thereafter.
 - c. Whenever a new hazard or job is introduced.

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

- d. Whenever employees fail to demonstrate proper use or knowledge.
- 2. Training must address, at a minimum, the following:
 - a. Why the respirator is necessary, and what conditions can make the respirator ineffective.
 - b. What the limitations and capabilities of the respirators are.
 - c. How to use respirators effectively in emergency situations.
 - d. How to inspect, put on and remove, and check the seals of the respirator.
 - e. What the respirator maintenance and storage procedures are.
 - f. How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator.
- E. Require respirator users to be fit tested.
 - 1. Any employee who has been assigned a reusable respirator must be fit tested on an annual basis (no more than one year may elapse between fit tests), or when the employee is assigned a respirator of a different make, type or size from that previously tested.
 - 2. Fit testing can be performed by contract or in house personnel.
 - 3. Obtain a signed written copy of the fit test results. The fit test results should include:
 - a. Employee's name and social security number.
 - b. Respirator brand, model and size fitted for.
 - c. Date fit tested.
 - d. Method of fit testing used.
 - e. Name and signature of fit tester.
 - f. Statement that fit test protocol met the requirements of 29 CFR 1910.134.

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

g. Manufacturer and serial number of fit testing apparatus.

A fit test results form is available at Attachment 42-5.

F. Provide qualified employees with respirator(s) and adequate amounts of parts and cartridges.

1. Assign employees whose duties require respirators their own respirator for which they have been fit tested.
2. Provide special eyeglass inserts designed for the respirator if an employee must wear eyeglasses with a full facepiece respirator. Contact lenses may be worn when wearing a full facepiece respirator.

G. Require respirators to be used properly.

1. Prohibit facial hair where the respirator-sealing surface meets the wearer's face.
2. Require employees to perform a positive and negative fit check every time the respirator is put on.
3. Employees will leave the area where respirators are being used:
 - a. Before removing the facepiece for any reason.
 - b. To change cartridges.
 - c. If any of the following is detected:
 1. Vapor or gas breakthrough.
 2. Leakage around the facepiece.
 3. Changes in breathing resistance.
4. Use cartridges with End of Service Life Indicators or determine the respirator cartridge changeout schedule. See Attachment 42-4 for Guidance.

H. Require respirators to be cleaned and stored properly.

1. Clean and disinfect respirators after each use.

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

2. Store respirators in a plastic bag or case and in a clean location.
3. Inspect respirators before use and after each cleaning.
- I. Address issues associated with special use respirators self-contained breathing apparatus; air supply respirators; emergency use respirators).
 1. Self Contained Breathing Apparatus

Inspect self-contained breathing apparatus and other emergency use respirators monthly and after each use in accordance with manufacturer's instructions.
 2. Air Supplied Respirators
 - a. Air used for atmosphere-supplying respirators must meet or exceed the requirements for Type 1 - Grade D breathing air. Never use oxygen.
 1. A certificate of analysis must accompany bottled air.
 2. Compressors used to supply breathing air must:
 - i. Prevent entry of contaminated air into the air supply.
 - ii. Minimize moisture content.
 - iii. Have suitable in-line sorbent beds and filter to provide appropriate air quality.
 - iv. Have a high carbon monoxide alarm that sounds at 10 ppm.
 - b. Couplings on air hose lines must be incompatible with other gas systems.
- J. Require follow up training and medical surveillance to be provided as directed.
 1. Provide follow-up physical examinations as directed by the SMS 24-3, Medical Screening and Surveillance Exam Protocol table.
 2. Provide follow-up physicals as directed by the Regional Medical Surveillance Administrator.

URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

3. Provide annual refresher training.
4. Provide annual fit testing.

5. Documentation Summary

A. Laboratory

1. File these records in the Laboratory Safety Filing System
 - a. Completed forms:
 1. "Identifying When A Respirator Is Needed" - Attachment 42-1; and,
 2. "Respirator Standard Operating Procedure" - Attachment 42-3.;
 - b. Employee Health Status Medical Report includes clearance for respirator use.
 - c. Employee Fit Test Records; and,
 - d. Employee Respirator Training Records.
2. Send a copy of the following records to the Regional Health and Safety Manager:
 - a. Completed "Voluntary Use of Respirators" form - Attachment 42-2.
 - b. Employee Fit Test Records.
 - c. Employee Respirator Training Records.

B. Field

1. File these records in the Project Health and Safety File:
 - a. Completed forms:
 1. "Identifying When A Respirator Is Needed" - Attachment 42-1; and,

URS SAFETY MANAGEMENT STANDARD **Respiratory Protection**

2. "Respirator Standard Operating Procedure" - Attachment 42-3.
 3. Employee Health Status Medical Report includes clearance for respirator use.;
 4. Employee Fit Test Records; and,
 5. Employee Respirator Training Records.
2. Send a copy of the following records to the Regional Health and Safety Manager:
- a. Completed "Voluntary Use of Respirators" form - Attachment 42-2,;
 - b. Employee Fit Test Records; and,
 - c. Employee Respirator Training Records.

6. Resources

- A. U.S. OSHA Standard - Respiratory Protection - 29 CFR 1910.134
- B. U.S OSHA Technical Links - Respiratory Protection
- C. ANSI Z88.6, Respirator Use – Physical Qualifications for Personnel, Current Revision
- D. ANSI Z88.2, Respiratory Protection, Current Revision
- E. 3M Cartridge Service Life Interactive Program
- F. Australian Standards AS/N25 1715 - 1994. Selection, Use, and Maintenance of Respiratory Protection Devices
- G. Australian Standards HB9-1994. Occupational Personal Protection
- H. AIHA, The Occupational Environment - Its Evaluation and Control

The following documents are PDF files which must be read with Adobe Reader:

- I. NIOSH Respirator Decision Logic

URS SAFETY MANAGEMENT STANDARD
Respiratory Protection

- J. NIOSH Guide to Industrial Respiratory Protection
- K. Attachment 42-1 - Identifying When a Respirator is Needed
- L. Attachment 42-2 - Voluntary Use of Respirators
- M. Attachment 42-3 - Respirator Standard Operating Procedure
- N. Attachment 42-4 - Respiratory Cartridge Change Schedule
- O. Attachment 42-5 - Fit Test Results Form
- P. Medical Screening and Surveillance Program - SMS 24

URS SAFETY MANAGEMENT STANDARD

Back Injury Prevention

1. Applicability

This procedure applies to URS operations where personnel perform manual lifting.

2. Purpose and Scope

The purpose of this procedure is to prevent back injuries to URS personnel.

3. Implementation

Office Locations - Implementation of this procedure is the responsibility of the Office Manager.

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

4. Requirements

A. Safe Lifting Practices in the Office

1. Require that personnel receive the training described in (C) below.
2. Evaluate all assignments that involve lifting, such as moving boxes of files and paper, computer equipment, and the like to see that the task can be completed without risk of back injury to assigned personnel.
3. Provide material handling devices, such as carts and dollies, to assist in the safe moving of materials.
4. Obtain outside assistance, such as contract movers, if the job cannot be safely accomplished by URS personnel.
5. Require that heavier items are stored on lower shelving units.

B. Safe Lifting Practices in the Field

1. Recognize that field assignments tend to be lifting-intensive, and that URS has a duty to provide the means by which personnel can perform lifting duties without risk of injury.
2. Require that personnel receive the training described in (C) below.

URS SAFETY MANAGEMENT STANDARD

Back Injury Prevention

3. Evaluate all field assignments that involve lifting to see that the tasks can be completed without risk of back injury to assigned personnel.
4. Provide material handling devices, such as carts, dollies, trucks with lift gates, to assist in the safe moving of materials. If required, assign additional personnel to the task.
5. Direct field personnel not to assist in lifting tasks that are normally undertaken by subcontractor personnel.
6. Contact a URS Health and Safety Program Representative when assistance is necessary to evaluate a lifting task that may pose a back injury risk to assigned personnel.

C. Training

1. Require that personnel who may have lifting as part of their duties receive training that includes the following topics:
 - a. Showing personnel how to avoid unnecessary physical stress and strain.
 - b. Teaching personnel to become aware of what they can comfortably handle without undue strain.
 - c. Instructing personnel on the proper use of equipment.
 - d. Teaching personnel to recognize potential hazards and how to prevent or correct them.
2. This training must be completed prior to an employee being assigned to a task that involves lifting.

D. Office Moves and Relocations

1. Utilize professional movers (who are appropriately insured) to move office furniture such as desks, file cabinets, and bookcases, even if such a move is only between offices or cubicles at a particular location (on-site move).
2. Utilize professional movers for intensive moving of file boxes and other heavy materials.

URS SAFETY MANAGEMENT STANDARD

Back Injury Prevention

E. Material Packaging

1. Use only smaller size (<18") file ("Banker") boxes for file storage, as the larger (>18") boxes are awkward and readily overloaded.
2. Use only smaller coolers for field samples, as the larger coolers are awkward and readily overloaded.

5. Documentation Summary

File the following documents in the Office Health and Safety File

- Training rosters

File the following documents in the Project Health and Safety File

- Training rosters

6. Resources

- A. Work Practices Guide for Manual Lifting, NIOSH

URS SAFETY MANAGEMENT STANDARD

Subcontractor Health and Safety Requirements

1. Applicability

This procedure is applicable to subcontractors retained by URS to perform construction (including drilling and excavation), alteration, demolition, and/or repair activities utilizing their own workforce or equipment. This procedure is applicable to the operations of subcontractors and sub-subcontractors of any tier.

This procedure does not apply to third party contractor operations where there is no subcontract relationship between the contractor and URS Corporation. Health and safety issues regarding third party contractor operations are governed by project specific contracts and are not covered by this standard.

2. Purpose and Scope

This procedure provides guidelines on the pre-evaluation of subcontractor safety programs. It also provides guidance on contractual risk management, subcontractor safety performance on the job site, and the responsibilities of the Project Manager with respect to subcontractor jobsite safety performance.

It is recommended that each URS Corporation subcontractor be evaluated at least annually using Attachment 46-1, "Subcontractor Safety Evaluation Form," in order to perform work on any new URS Corporation projects.

3. Implementation

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

4. Guidelines

A. Pre qualification of Subcontractor - The Project Manager shall complete the following procedures for all subcontractors retained on projects covered by this standard (the PM should also require subcontractors to follow these procedures with respect to pre-qualification of sub-subcontractors of any tier):

1. Request all subcontractor candidates to complete the attached "Subcontractor Health and Safety Evaluation Form" (Attachment 46-1).
2. Conduct an assessment of each subcontractor's qualifications with respect to the subcontractor health and safety evaluation criteria contained in Attachment 46-2.

URS SAFETY MANAGEMENT STANDARD

Subcontractor Health and Safety Requirements

3. Verify that subcontractors meet the insurance requirements as stated in Attachment 46-2 or as approved by Counsel.
4. If the subcontractor has been successfully evaluated within the last 12 months, that evaluation may be substituted.
5. For long term projects, this evaluation should be updated within 12 months of the previous evaluation.

B. Contractual and Risk Management Requirements of Subcontractors

1. Ensure that subcontractor is contractually bound to comply with applicable client and URS Corporation Health and Safety Program requirements.
2. Ensure that subcontractor is contractually bound to develop additional safety procedures for work that is exclusive to their activities on the site and for which they may have superior knowledge.
3. Assess compliance of subcontractor's insurance with the URS Corporation subcontract requirements (including, but not limited to, necessary types and amounts of coverage, URS Corporation additional insured endorsement, etc.).
4. Ensure that URS Corporation has the right in its subcontract, without liability to the subcontractor, to stop the subcontractor's work in the event of any violations of the applicable Health & Safety Plan.

C. Subcontractor Safety Representative

1. Require each subcontractor to appoint a Subcontractor Safety Representative (SSR) who:
 - a. Is knowledgeable of the subcontractor's activities.
 - b. Understands the safety requirements of the subcontractor's activities.
 - c. Has the ability to recognize and the authority to correct safety deficiencies and execute a stop work order should an imminent danger arise.

URS SAFETY MANAGEMENT STANDARD

Subcontractor Health and Safety Requirements

- d. Has the responsibility for the administration of the subcontractor Health and Safety Program.
- e. Will serve as the direct contact with URS Corporation regarding resolution of Health and Safety issues.

D. Communication

1. Provide the SSR with information regarding Site Safety Program including but not limited to:
 - a. Client Requirements.
 - b. URS Corporation Site Safety Program.
 - c. Site Hazard Communication Program.
 - d. Site Emergency Action Plan.
 - e. Any additional safety information from other contractors or subcontractors working on the site.
2. Provide SSR with name of URS Corporation project contact and alternate for addressing site Health and Safety issues.
3. Require the participation of subcontractors in all Site Safety Briefings.
4. Require subcontractor compliance with all safety directives and/or stop work orders issued by the URS Corporation site representatives.

E. Subcontractor Safety Performance

1. To the extent reasonable in light of URS Corporation's scope of work under the client contract, visit the site and periodically observe subcontractors operations (i.e., conduct spot checks) to assess whether subcontractor appears to be conducting its operations in accordance with applicable health and safety requirements. Periodically review any required subcontractor health and safety written documentation for compliance with applicable requirements.
2. In the event that deficiencies are observed immediately bring them to the attention of the SSR for resolution.

URS SAFETY MANAGEMENT STANDARD

Subcontractor Health and Safety Requirements

3. In the event of observation of an "Imminent Danger" situation (i.e. involving a situation that could result serious injury or death), immediately contact the SSR and stop the work.
4. Investigate all injuries/illnesses related to subcontractor operations to identify causes and effect corrective actions.
5. In the event of serious and/or continuing subcontractor breaches of applicable health and safety requirements contact legal counsel to assess whether formal contractual action is appropriate under the subcontract.

5. Documentation Summary

A. File in the Project Safety File

1. Subcontractor Health and Safety Evaluation Form.
2. Applicable and current Insurance Certificates.
3. Names and telephone numbers of SSR for each subcontractor.
4. Verification of Health and Safety documents transmitted to subcontractors and received from subcontractors.
5. Identified safety deficiencies as applicable for subcontractors and verification of correction of conditions.
6. All other safety related documentation between URS Corporation and subcontractor such as training certifications, etc.
7. Subcontractor safety plan, incident reports and resolution reports.

6. Resources

- A. Federal OSHA Workplace Injury and Illness statistics
(<http://www.osha.gov/oshstats/work.html>)
- B. Managing Subcontractor Safety, Prepared by The Construction Industry Institute, Safety Task Force, Publication 13-1, The University of Texas at Austin, Austin, Texas, 1991 (<http://www.construction-institute.org/>)
- C. American National Standard Construction and Demolition Operations -- Safety and Health Program Requirements for Multi-Employer Projects,

URS SAFETY MANAGEMENT STANDARD
Subcontractor Health and Safety Requirements

ANSI A10.33-1992, National Safety Council, Itasca, Illinois 60143-3201
(<http://www.nsc.org>)

- D. "Liability, OSHA and the Safety of Outside Contractors," Professional Safety, American Society of Safety Engineers, January 1993
(<http://www.asse.org>)
- E. "Proactive Construction Management; Dealing With the Problem of Subcontractor Safety," Professional Safety, American Society of Safety Engineers, January 1990 (<http://www.asse.org>)
- F. "Design Professional Liability Under OSHA," Presented by Thomas F. Holt, Jr., HWAC Lawyer's Roundtable, June 14, 1995 (to be Published)
(<http://www.hwac.org>)
- G. "Occupational Injury and Illness Rates by SIC", Bureau of Labor Statistics, U. S. Department of Labor (<http://stats.bls.gov/sahome.html>)
- H. Attachment 46-1 - Subcontractor Safety Evaluation Form
- I. Attachment 46-2 - Subcontractor Evaluation Criteria



Health and Safety Program
**SUBCONTRACTOR SAFETY
EVALUATION FORM**

Attachment 46-1

It is the policy of URS to provide a safe and healthful environment for all of its employees through the prevention of occupational injuries and illnesses. As such, URS considers safety as paramount and requests the following information of all subcontractors.

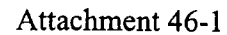
Company Name	
Company Address	
Submitted By	
Title	
Phone	
Fax	
Type of services performed	
Standard Industrial Classification (SIC) Code	
Number of employees in company	
Date of submittal	

SAFETY PERFORMANCE DATA

1. Has your company performed work as a subcontractor to URS previously? ☐ Yes ☐ No

If yes, explain the nature of the work, project location and project date, URS Project Manager and telephone number.

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Health and Safety Program
**SUBCONTRACTOR SAFETY
EVALUATION FORM**

Attachment 46-1

5. Has your company received any Willful violations? ☐ Yes ☐ No
6. Does your company maintain a written Health and Safety program? ☐ Yes ☐ No
If yes please include a copy of the Table of Contents.
7. Does your firm have a safety officer? ☐ Yes ☐ No
If yes, please provide name and telephone number

Name

Telephone

8. Is your company capable of preparing safety procedures specific to the work proposed for this project? ☐ Yes ☐ No

RISK MANAGEMENT / INSURANCE DATA

1. Does your firm have insurance coverage for commercial liability and automobile liability without limits of at least \$1,000,000? ☐ Yes ☐ No
(Note that certain URS client contracts require insurance in excess of the levels noted above. Inability to supply insurance at levels required by URS' client contract could result in disqualification.)
2. Are you able to provide URS with insurance certificates naming URS and if requested, URS' client as an additional insured? ☐ Yes ☐ No
3. Please provide proof of current Worker's Compensation and Employers Liability Insurance coverage (attach certificate).



Health and Safety Program
**SUBCONTRACTOR SAFETY
EVALUATION FORM**

Attachment 46-1

VERIFICATION OF DATA

Please have an officer of the Company sign below certifying that the information provided in this document is current and correct.

Name

Title

Signature

Date

Misrepresentation of data requested is grounds for immediate termination of contracts and disqualification from future consideration.

URS Use Only

Date Received: _____

Evaluated by: _____

Project Manager

Referrals only required as per Attachment 2

- ☐ Submitted to Health and Safety Rep for evaluation: H&S Rep _____
- ☐ Pass
- ☐ Fail
- ☐ Submitted to Counsel for evaluation: Counsel _____
- ☐ Pass
- ☐ Fail

Final Evaluation

☐ Pass

☐ Fail

Project Manager: _____

Signature: _____

Date: _____



Health and Safety Program
**SUBCONTRACTOR
EVALUATION CRITERIA**

Attachment 46-2

Prior to engaging a subcontractor on a project, Project Managers are strongly recommended to ensure that the contractor has an effective safety program, is capable of conducting its operations in a safe manner and has appropriate insurance coverage. The following guidelines shall be followed in determining whether the subcontractor may be used on a URS Corporation project.

GENERAL INFORMATION

The contractor must be able to complete the header section on Page 1 of the questionnaire including their Standard Industrial Classification. For assistance determining the SIC for a business refer to the Standard Industrial Classification Manual online at <http://www.osha.gov/oshstats/sicser.html>.

SAFETY PERFORMANCE DATA RESPONSES

The numbers in this section directly correspond to the questions in Attachment 46-1.

1. If yes, check safety performance history with previous URS Corporation Project Manager if unknown.
2. For any EMR listed as greater than 1.0 the contractor has failed the evaluation. Further consideration may not occur without referral to URS Corporation Health and Safety Program Professional in your Region for further assessment.

If all EMRs listed are 1.0 or below, continue with evaluation.

3. Determine the most recent OSHA Incident Rate and Lost Workday Case Rate for the subcontractors SIC. This may be done online at <http://www.osha.gov/oshstats/work.html>.

For rates in excess of the published averages the subcontractor has failed the evaluation. Further consideration may not occur without referral to URS Corporation Health and Safety Program Professional in your Region for further assessment.

If the rates are at or below the average for the subcontractors SIC, continue with the assessment.

4. Determine the subcontractor's citation history at <http://www.osha.gov/cgi-bin/est/est1>. Compare the published data to the contractor questionnaire. The subcontractor must explain any discrepancies.

Look for large numbers of serious and repeat violations. If the suggests a problem request information and refer to URS Corporation Health and Safety Program Professional in your Region for further assessment.



**SUBCONTRACTOR
EVALUATION CRITERIA**

5. If subcontractor answers yes to willful violations request a detailed explanation and refer to URS Corporation Health and Safety Program Professional in your Region for further assessment.
6. For small subcontractors a no answer is not unexpected and may be acceptable with good EMR and OSHA statistics. Generally some minimal program is expected depending on the breadth and complexity of the work. Contact URS Corporation Health and Safety Program Professional in your Region for further assessment if you have any questions or doubts.
7. See 6.
8. It is expected that a subcontractor being hired to perform services on the project site should be the best prepared to address safety issues for their operations, especially when specialty work is being conducted or for work in which the subcontractor possesses superior knowledge of their operations.

A 'no' answer should be referred to the URS Corporation Health and Safety Program Professional in your Region for further assessment.

RISK MANAGEMENT/INSURANCE DATA

1. The inability to provide insurance coverage at or above \$1,000,000 requires referral to Counsel.
2. Proof of Workers Compensation Insurance is required. Refer any questions to Counsel.
3. Ability to provide Insurance Certificates naming URS Corporation as an additional insured is required. Refer any questions to Counsel.

URS SAFETY MANAGEMENT STANDARD

Injury / Illness / Incident Reporting

1. Applicability

This procedure applies to URS Corporation offices and field operations.

2. Purpose and Scope

The purpose of this procedure is to provide guidance for the timely reporting of work related injuries, illness, and incidents.

3. Implementation

Office Locations - Implementation of this program is the responsibility of the employee's Supervisor.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

4. Requirements

- A. Reporting: All employees shall immediately notify their appropriate level of management (line, project, and/or office) of a reportable incident. A reportable incident includes the following:
1. An injury to any URS employee, subcontractor, client representative, or private citizen, even if the injury does not require medical attention;
 2. An injury to a member of the public occurring on a URS work site or possibly resulting from a URS or subcontractor activity or involving URS or subcontractor property, equipment, or resource;
 3. Illness resulting from suspected chemical exposure;
 4. Chronic or re-occurring conditions such as back pain or cumulative trauma disorders (example: carpal tunnel syndrome);
 5. Fire, explosion, or flash;
 6. Any vehicle accidents occurring on site, while traveling to or from client locations, or with any company-owned or leased vehicle;
 7. Property damage resulting from any URS or subcontractor activity;
 8. Structural collapse or potential structural hazards;

URS SAFETY MANAGEMENT STANDARD **Injury / Illness / Incident Reporting**

9. Unexpected release or imminent release of a hazardous material;
10. Unexpected chemical exposures to workers or the public;
11. A safety related complaint from the public regarding URS activities.
12. Any other significant occurrence that could impact safety.

B. Actions: The following actions will be taken following a reportable incident:

1. Employees:

- a. If necessary, suspend operations and secure and/or evacuate the area;
- b. Immediately notify your supervisor and/or project manager
- c. Record information pertaining to the incident (e.g., time, date, location, name and company of person(s) involved, description of event, and actions taken);
- d. Assist with incident investigation as directed by management;
- e. Implement corrective actions as directed by management;
- f. *Do not* discuss the incident with members of the news media or legal representatives (except URS legal counsel or your personal legal advisor) unless directed to do so by URS management;
- g. *Do not* make statements pertaining to guilt, fault, or liability.

2. Line/Project Management:

- a. Review circumstances of the incident with applicable employee(s);
- b. Notify local Health and Safety representative. If incident involves and an injury/illness of a URS employee, also notify the local Human Resources Representative;
- c. Complete and distribute injury/incident report within 24 hours. (Note: If the employee is unable to complete the

URS SAFETY MANAGEMENT STANDARD

Injury / Illness / Incident Reporting

report, another company employee, line manager, project manager, or local health and safety representative may complete the report.);

- d. Review and verify that necessary corrective actions are identified and implemented;
- e. Discuss with department or project staff the circumstances surrounding the incident and corrective actions taken.

3. Local Health And Safety Representative

- a. Assist with incident evaluation;
- b. With management, identify cause(s) of incident and identify corrective actions needed to avoid recurrence;
- c. Review injury/incident report for completeness and accuracy;

4. Local Human Resources Representative

- a. Report work-related injuries and illness to worker compensation carrier

(St. Paul Fire and Marine @ 1-800-787-2851);

5. Documentation Summary

A. File these records in the Office Safety File:

- 1. Attachment 49-1 - Incident Report Form
- 2. Maintain OSHA 200 Log.

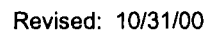
B. File these records in the Project Health and Safety File

- 1. Attachment 49-1 - Incident Report Form
- 2. Maintain OSHA 200 Log if applicable for Project.

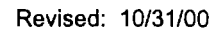
6. Resources

A. U. S. OSHA

B. Attachment 49-1 - Incident Report Form



DESCRIPTION OF INCIDENT: (Describe the facts contributing to the incident. Identify individuals involved, witnesses, and their affiliations. Attach additional sheets, drawings, or photographs as needed.)

[illegible]

URS SAFETY MANAGEMENT STANDARD Specific Chemical Hazards

1. Applicability

This standard applies to US-based URS Corporation office and field operations.

2. Purpose and Scope

This standard provides guidance in controlling potential employee exposures to toxic and hazardous substances specifically regulated by OSHA. These substances include:

Asbestos	13 Carcinogens:	
Vinyl Chloride	• 4-Nitrobiphenyl	• 4-Aminodiphenyl
Inorganic Arsenic	• Alpha-Naphthylamine	• Ethyleneimine
Cadmium	• Methyl chloromethyl ether	• beta-Propiolactone
Benzene	• 3,3'-Dichlorobenzidine	• 2-Acetylaminofluorene
Coke Oven Emissions	• Bis-Chloromethyl ether	• 4-Dimethylaminoazobenzene
1,2-dibromo 1-3 chloropropane	• beta-Naphthylamine	• N-Nitrosodimethylamine
Acrylonitrile	• Benzidine	
Ethylene Oxide		
Formaldehyde		

3. Implementation

Office Locations: Implementation of this standard is the responsibility of the Office Manager.

Field Activities: Implementation of this standard is the responsibility of the Project Manager.

4. Requirements

A. Identification of Hazardous Substances

1. Prior to performing any work including; drilling, excavation, demolition, alteration, salvage, repair, restoration, welding, brazing, grinding, or other surface disturbing activities determine if any of the hazardous substances identified in section 2 of this SMS are present in the work area.

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Specific Chemical Hazards

B. Determine the Potential for Employee Exposure to the Hazardous Substance

1. If any of the substances are identified, conduct an exposure assessment based on the type of work to be performed to determine if employees have the potential to be exposed above any action level identified in the substance-specific regulations. This assessment must be reviewed and approved by the Regional Health and Safety Manager.
2. Include the results of the initial exposure assessment in the project/office health and safety plan and/or project/office health and safety file.

C. Controlling Potential Employee Exposures.

1. Where the initial exposure assessment identifies the potential for employee exposures above an established action level, develop a project/office specific program to address all required regulatory concerns for that substance(s). Completed programs and/or guidance documents are to be included in project-specific health and safety plans.
2. Attachment 50-1 provides a general checklist, to be used in conjunction with the substance-specific standard, to assure the program covers all required areas of concern.

D. Compliance Programs

When compliance programs are required by a specific standard, the following outline shall be utilized unless otherwise directed by the standard:

1. Description of work activities that expose personnel.
2. Equipment to be used and procedures to be followed during exposure activities.
3. Employee job responsibility and crew size during exposure activities.
4. Maintenance practices to be followed for servicing and cleaning equipment and disposing of waste.

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Specific Chemical Hazards

5. Specific instructions on how to set up engineering controls (ventilation; containment; etc.).
6. Air monitoring data from initial assessment.
7. A detailed work schedule for implementation.
8. A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees of potential exposure .
9. Name of Competent Person who will be responsible for performing regular inspections of the job site, materials, and equipment during the job.

The Regional Health and Safety Manager must approve all compliance programs.

E. Training Requirements

1. All employees with potential exposure to the substances covered by this SMS must receive appropriate training prior to performing activities that could result in exposure. This training must be performed initially, upon any substantial changes to the operation covered, and annually. In general, the training should cover the following topics unless otherwise indicated by the specific standard:
 - a. Basic Employee Training:
 - Regulated areas: authorizations, entrance restrictions
 - Signs and warnings
 - Container contents identification
 - The nature of the specific hazards
 - The specific operations that could result in exposure
 - The medical surveillance program
 - Personal protective equipment
 - Hygiene practices and procedures
 - Decontamination practices

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Specific Chemical Hazards

- Emergency practices and procedures
 - Employee's specific role in emergency procedures
 - Recognition and evaluation of potential hazardous situations
 - Employee's specific duties and responsibilities
 - First aid procedures
- b. Supervisor Training (in addition to basic employee training):
- Operations reports required
 - Incident reports required
 - Medical surveillance program
 - Medical examinations
 - Records keeping
 - Training program and outline
2. All training performed as part of this SMS will be documented and tracked in accordance with SMS 055.

5. Documentation Summary

A. File these records in the Office Safety Filing System:

1. Hazardous substance list.
2. Approved exposure assessment.
3. Completed "Toxic and Hazardous Substance Checklist" (Attachment 50-1) along with any required guidelines and/or programs.
4. Approved Compliance Program
5. Training Records

B. File these records in the Project Safety File:

1. Hazardous substance list.

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Specific Chemical Hazards

2. Approved exposure assessment.
3. Completed "Toxic and Hazardous Substance Checklist" (Attachment 50-1) along with any required guidelines and/or programs.
4. Approved Compliance Program
5. Training Records

6. Resources

- A. Asbestos - 29 CFR 1910.1001 and 29 CFR 1926.1101
http://www.osha-slc.gov/OshStd_data/1910_1001.html
- B. 13 Carcinogens - 29 CFR 1910.1003 and 29 CFR 1926.1103
http://www.osha-slc.gov/OshStd_data/1910_1003.html
- C. Vinyl chloride - 29 CFR 1910.1017 and 29 CFR 1926.1117
http://www.osha-slc.gov/OshStd_data/1910_1017.html
- D. Inorganic arsenic - 29 CFR 1910.1018 and 29 CFR 1926.1118
http://www.osha-slc.gov/OshStd_data/1910_1018.html
- E. Cadmium - 29 CFR 1910.1027 and 29 CFR 1926.1127
http://www.osha-slc.gov/OshStd_data/1910_1027.html
- F. Benzene - 29 CFR 1910.1028 and 29 CFR 1926.1128
http://www.osha-slc.gov/OshStd_data/1910_1028.html
- G. Coke oven emissions - 29 CFR 1910.1029 and 29 CFR 1926.1129
http://www.osha-slc.gov/OshStd_data/1910_1029.html
- H. 1,2-dibromo-3-chloropropane - 29 CFR 1910.1044 and 29 CFR 1926.1144
http://www.osha-slc.gov/OshStd_data/1910_1044.html
- I. Acrylonitrile - 29 CFR 1910.1045 and 29 CFR 1926.1145
http://www.osha-slc.gov/OshStd_data/1910_1045.html
- J. Ethylene oxide - 29 CFR 1910.1047 and 29 CFR 1926.1147
http://www.osha-slc.gov/OshStd_data/1910_1047.html
- K. Formaldehyde - 29 CFR 1910.1048 and 29 CFR 1926.1148
http://www.osha-slc.gov/OshStd_data/1910_1048.html

URS SAFETY MANAGEMENT STANDARD **Bloodborne Pathogens**

1. Applicability

This program applies to all employees who may incur exposure to blood or other potentially infectious body fluids as a result of performing their assigned job duties. Examples include: designated first aid responders or work assignment at a client's medical laboratory site. Note: Sewage work does not typically involve exposure to bloodborne pathogens even though other biological hazards may be present.

2. Purpose and Scope

The purpose of this program is to identify jobs and tasks where occupational exposure to bloodborne pathogens (i.e. Human Immunodeficiency Virus, Hepatitis B and C Viruses, and others) may occur and to implement controls which will eliminate or significantly reduce the risk of infectious bloodborne diseases in accordance with the OSHA Bloodborne Pathogen Standard (29 CFR 1910.1030). This program also includes provisions for affected employees to receive personal protective equipment, Hepatitis B vaccinations, training, and if necessary, confidential medical evaluations and follow up.

3. Implementation

Office/Laboratory Locations – Implementation is the responsibility of the Operations Manager.

Field Activities – Implementation is the responsibility of the Project Manager.

Program Administration – The Occupational Health Specialist (OHS) and URS Health & Safety Director are responsible for implementation and annual evaluation of the Exposure Control Plan (ECP) – Attachment 51-1. The OHS will ensure that all medical actions required are performed and that the appropriate employee health and OSHA records are maintained. The URS Health & Safety Director will oversee provisions of necessary personal protective equipment and supplies, training, documentation of training, and will make the written ECP available to employees and OSHA representatives.

4. Requirements

A. Risk Identification

1. The Project Manager, with assistance from the site Health & Safety Representative, will perform an exposure determination concerning

URS SAFETY MANAGEMENT STANDARD

Bloodborne Pathogens

which employee may or may not have exposure to bloodborne pathogens. Employees will be classified into two categories:

- a. Employees formally designated as part of their job to perform tasks that may involve direct contact with blood or potentially infectious body fluids.
 - i. Requires initial and annual training
 - ii. Hepatitis B vaccination series will be offered
 - iii. Requires procedures be followed in ECP
 - b. Employees not assigned to jobs or tasks that involve exposure to blood or potentially infectious body fluids, but who could in extraordinary situations, voluntarily assist injured or ill individuals, and therefore could have exposure to bloodborne pathogens.
 - i. Requires post-exposure procedures outlined in ECP
2. The ECP will be reviewed and updated at least annually, and whenever necessary to include new or modified tasks and procedures.
- B. Exposure Control Methods**
1. All employees will utilize universal precautions – an approach to infection control where all human blood and body fluids are treated as potentially infectious.
 2. Engineering and work practice controls (e.g. sharps disposal containers, perform procedures to prevent splashing) will be used to eliminate or minimize exposure to employees.
 3. Personal protective equipment (e.g. disposable gloves, face masks with eye protection, liquid impermeable gowns, CPR pocket masks) will be provided and used in order to place a barrier between the employee and the blood or body fluids.
 4. Hands are to be washed immediately with soap and water after removing gloves or performing any work with blood or body fluids.

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5. Housekeeping and decontamination of work surfaces with EPA-registered germicides or a bleach solution diluted 1:10 with water, will be performed as needed to maintain a safe working environment.
 6. Regulated biohazardous waste (contaminated sharps or items that are capable of releasing blood or body fluids through employee handling) will be disposed of in special waste receptacles lined with red bags and incinerated per federal and state regulations. This does not include small amounts of waste from a minor wound which can be sealed in a plastic bag and disposed of in regular trash.
- C. Hepatitis B Vaccination series will be made available to all employees who have been designated to perform tasks that involve direct exposure to bloodborne pathogens. Further, this vaccination series will be made immediately available to employees that have had an occupational bloodborne exposure incident, whether as a result of their assigned tasks or occurring as a result of incidental contact.
- D. In the event that an employee is exposed to blood or body fluids, they should immediately flush the affected area with copious amounts of water. A confidential medical evaluation and follow-up with an occupational physician should be arranged for the employee as soon as possible following the report of an exposure incident, preferably within 1-2 hours after the exposure incident has occurred.
- E. Hazard Communication
1. Orange-red biohazard warning labels will be used to identify lab areas or disposal containers with blood or other potentially infectious materials present.
 2. Initial and annual training classes will be conducted by the Division Health & Safety Managers for all employees assigned to tasks where occupational exposure may occur.
- F. Exposure Incident Investigation
- The OHS and Division Health & Safety Manager will review the circumstances of each exposure incident to determine if the appropriate work procedures were being followed at the time of the incident and to assess and implement any necessary corrective actions, including changes required in the ECP.

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Bloodborne Pathogens

5. Documentation Summary

- A. Distribute Medical Surveillance Evaluation form to Medical Services Provider, site Health & Safety Representative, and Supervisor.
- B. Post-exposure medical records from consulting physician and exposure incident reports will be retained in employee's confidential medical record.
- C. Send initial and annual training records to the Division Health & Safety Manager.
- D. Regulated infectious medical waste manifest records will be stored by the site Health & Safety Representative.

6. Resources

- A. U.S. OSHA 29 CFR 1910.1030 Occupational Exposure to Bloodborne Pathogens Standard, current revision.
(http://www.osha-slc.gov/OshStd_data/1910_1030.html)
- B. Centers for Disease Control Morbidity and Mortality Weekly Report: "Public Health Service Guidelines for the Management of Health-Care Worker Exposure to HIV and Recommendations for Post-exposure Prophylaxis" May 15, 1998; Vol. 47, No. RR-7.
(<http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00052722.htm>)
- C. Centers for Disease Control Morbidity and Mortality Weekly Report: "Immunization of Health-Care Workers: Recommendations" December 26, 1997; Vol. 46, No. RR-18.
(<http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00050577.htm>)
- D. Centers for Disease Control Morbidity and Mortality Weekly Report: "Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease" October 16, 1998; Vol. 47, No. RR-19.
(<http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00055154.htm>)
- E. Bloodborne pathogens standard and the construction industry (OSHA letter of interpretation 01-26-93)
(http://www.osha-slc.gov/OshDoc/Interp_data/l19930420A.html)
- F. Clarification on first aid requirements for hazardous waste sites (OSHA letter of interpretation 04-20-93)

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(http://www.osha-slc.gov/OshDoc/Interp_data/I19930420A.html)

- G. Worksafe Australia: National Occupational Health & Safety Commission. National Code of Practice for health care workers and other people at risk of the transmission of Human Immunodeficiency Virus and Hepatitis B in the workplace. [NOHSC: 2010(1993)]
(http://www.worksafe.gov.au/publications/fulltext/codes/nohsc2010_toc.htm)



BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

1. INTRODUCTION

Employees are at risk for exposure to and possible transmission of infectious diseases each time they are in contact with blood or body fluids. Bloodborne pathogens are microorganisms present in human blood and other body fluids that can cause serious disease in humans and include, but are not limited to Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV).

Therefore, this exposure control plan (ECP) has been established to ensure that employees are effectively informed concerning potential workplace health hazards and that protective measures necessary to eliminate or minimize bloodborne exposure incidents are utilized whenever possible.

2. EXPOSURE DETERMINATION

The Medical Surveillance Evaluation form will be used to evaluate which employees may incur occupational exposure to blood or other potentially infectious materials when performing routine tasks and procedures. These exposure determinations will be made without regard to the use of personal protective equipment and regardless of exposure frequency.

The employees in the following job classifications may have occupational exposure to bloodborne pathogens and are covered by this program:

- Occupational health nurse
- Designated first aid providers
- Medical laboratory employees

Tasks and procedures which may expose employees to bloodborne pathogens include:

- Treating cuts, abrasions, and burns
- Cleaning contaminated environmental surfaces
- Administering cardiopulmonary resuscitation (CPR)
- Collecting samples at municipal waste sites or sewage lagoons
- Environmental sewer samplers or sewer construction workers
- Construction of residential sewer lines

3. EXPOSURE CONTROL

- A. "Universal precautions" are a required method of control to prevent exposure to blood and body fluids. This term refers to the concept that all human blood

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and certain human body fluids are treated as if known to be infectious for HIV, HBV, HCV, and other bloodborne pathogens, regardless of the perceived risk status of another individual. Universal precautions apply to blood, other body fluids containing visible blood, semen, and vaginal fluids. Universal precautions do not apply to feces, nasal secretions, saliva, sweat, tears, sputum, urine, and vomitus unless they contain visible blood. Although these fluids have an extremely low or nonexistent risk for bloodborne pathogens, they are a potential source for other infectious diseases and precautions should also be followed when these body fluids are present.

B. Engineering and Work Practice Controls

The following engineering controls shall be in place in all areas of occupational exposure:

1. Accessible handwashing facilities. If soap and running water are not available, an antiseptic hand cleaner in conjunction with clean paper towels or antiseptic towelettes are acceptable temporary alternatives to running water. When this alternative method is used, employees must wash their hands with soap and running water as soon as feasible.
2. Containers for disposable contaminated sharps will be puncture resistance, labeled a biohazard, leakproof, and have a closable top.
3. Containers for storage, transport, or shipment of blood or other potentially infectious materials, regulated waste, and contaminated laundry will be labeled with the biohazard symbol, site address, and have a securely closing lid.

The following work practice controls must be strictly followed to minimize exposure and isolate or remove bloodborne pathogens from the workplace:

4. Personal protective equipment will be provided at no cost to the employee will be chosen based on the anticipated exposure to blood. PPE is considered appropriate if it does not permit blood or other potentially infectious materials to reach or pass through clothes, skin, or mucous membranes of the eyes or mouth under normal conditions of use and for the duration of time the equipment will be used. PPE must be readily accessible and will be removed prior to leaving the work area.
 - a. Disposable, single use gloves shall be used as a protective barrier in all situations in which contact with body fluids is anticipated. Gloves of the correct size will be provided. Disposable gloves will not be washed or disinfected for reuse and will be replaced between employees and if they become

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torn or punctured. Gloves are especially important if the employee has cuts, abraded skin, chapped hands, or dermatitis.

- b. Liquid impermeable gowns, boots, and masks, in combination with eye protective devices such as goggles and shatterproof glasses with solid-side shields or chin-length face shields, shall be worn whenever splashing, spraying, or spattering of blood droplets or body fluids can be reasonably anticipated.
- c. Disposable pocket mask ventilation devices should be provided in all first aid kits and used to avoid mouth-to-mouth contact during emergency cardiopulmonary resuscitation.

Examples of Recommended PPE (depending on task, more PPE may be needed).

<u>Task</u>	<u>Gloves</u>	<u>Gown</u>	<u>Mask</u>	<u>Goggles</u>	<u>Boots</u>
Bleeding control w/ minimal bleeding	Yes	No	No	No	No
Bleeding control w /spurting blood	Yes	Yes	Yes	Yes	No
Cardiopulmonary resuscitation	No	No	Yes	No	No
Decontamination/clean-up	Yes	No	No	No	No
Collection of sewage waste	Yes	No	No	Yes	Yes
Construction of sewage lines	Yes	No	No	Yes	Yes
Medical laboratory activities	Yes	Yes	Yes	Yes	No

- 5. Eating, drinking, smoking, applying cosmetics, and handling of contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure. Food and drink will not be kept in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or body fluids are present.
- 6. Contaminated needles and other sharps will not be bent or recapped unless a one-handed technique is used. They will be disposed of in an appropriate sharps container.
- 7. All regulated, biohazardous waste will be placed in a waste receptacle that has designated red biohazard bags and a closable top controlled by a foot peddle. When full, the bags shall be removed with gloved hands, tied off, and placed in a biohazard shipping carton, to be held for pick-up. If any biohazard bag appears to be leaking, it must be double-bagged. The waste will be incinerated per federal and state regulations.

C. Housekeeping



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1. Universal precautions will be used when cleaning or decontaminating any surface or equipment that may be contaminated. Appropriate PPE will be used for protection during decontamination.
2. All contaminated environmental work surfaces such as countertops or floors will be cleaned with a household bleach solution diluted 1:10 with water directly following contamination with blood or body fluids.
3. Instruments such as tweezers, bandage scissors, and thermometers will be disposable rather than reusable equipment and will be disposed of in an appropriate manner.
4. Broken, contaminated glassware will not be picked up directly with the hands. It will be cleaned up using a mechanical means such as a brush and dustpan or tongs.

4. HEPATITIS B VACCINATION

Within 10 working days of placement, all employees assigned to tasks with potential occupational exposure to bloodborne pathogens will be offered the Hepatitis B vaccination at no cost to the employee, unless the employee has had a previous Hepatitis B vaccination series, antibody testing reveals the employee is immune or the vaccine is contraindicated for medical reasons. Further, this vaccination series will be made immediately available to employees who have an occupational exposure whether as a result of their assigned tasks or occurring from an incidental contact.

The local occupational medical facility used for routine medical surveillance will administer the vaccinations.

Employees who decline the Hepatitis B vaccine will sign a copy of the waiver form located at the end of this attachment. The signed waiver will be stored in the employee's medical record with the Occupational Health Specialist. Employees may initially decline the vaccination, but at a later date, while still covered under this plan, may then decide to take them. The vaccinations will be made available to the employee at that time.

Employees choosing to take the vaccination series will sign a consent form at the occupational clinic prior to receiving the injections and are advised to read the package insert regarding the efficacy, safety, method of administration, and benefits of the vaccine. Employees may also ask questions directly of the Medical Service Provider or local occupational physician. Employees are not required to participate in a prescreening program (to determine immunity) before receiving the vaccinations. If a routine booster of Hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) will be made available to affected employees.

**BLOODBORNE PATHOGENS
EXPOSURE CONTROL PLAN****5. POST-EXPOSURE INCIDENT EVALUATION AND FOLLOW-UP**

All occupational bloodborne pathogen exposures are to be reported to a Health & Safety Representative or the Occupational Health Specialist immediately after initial decontamination first aid is accomplished. Following the report of an exposure incident, a confidential medical evaluation with an occupational physician will be arranged as soon as possible, ideally no later than 1-2 hours after the incident has occurred. In some states, depending on applicable workers' compensation law, employees may choose treatment from their personal physician. A copy of the Bloodborne Pathogen Standard will be provided if the physician does not have a copy. A written URS Incident Report will be completed as soon as possible, fully describing the incident.

A. First aid protocol for treatment immediately after an exposure incident:

1. Lacerations, punctures, and abrasions should be washed under cool running water for at least 5 minutes allowing free bleeding. Cleanse area well with soap or iodine solution. Apply sterile dressing as needed. Give tetanus booster if indicated (7-10 years since last booster).
2. Ocular exposure requires irrigation of the eye with water or sterile normal saline solution for 15 minutes.
3. Mucous membrane exposure requires rinsing mouth with ½ strength 3% hydrogen peroxide for 30 seconds, four separate and consecutive times.

B. Confidential Medical Evaluation

1. The treating occupational physician will receive documentation of the routes of exposure, the circumstances surrounding the incident, and identification of the source individual (the individual the employee was exposed to). The blood of the source individual will be tested if possible and after consent is obtained. When legally permissible, results of testing of the source individual will be made available to the exposed employee with the exposed employee informed about the applicable laws and regulations concerning the disclosure of the identity and infectivity of the source individual.
2. Testing of the exposed employee's blood, if consented to (the employee may consent to baseline blood collection, but may request that the sample not be tested for HIV for up to 90 days, if at all), is recommended.



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3. Post-exposure medical treatment will be offered in accordance with the current recommendations of the U.S. Public Health Services. This may include, but is not limited to:

- a. A series of HIV post-exposure blood tests
- b. Hepatitis B vaccination and/or Hepatitis B immune globulin
- c. HIV post-exposure prophylactic medications
- d. Evaluation of acute febrile illnesses following exposure
- e. Employee counseling concerning precautions to take during the period after the exposure incident and information on signs and symptoms of potential illnesses.

C. Healthcare Professional's Written Opinion

The Occupational Health Specialist will obtain and provide the employee with a copy of the evaluating physician's written opinion within 15 days of the completion of the medical evaluation. A copy will be maintained in the employee's confidential medical record. The written opinion will be in accordance with the requirements of the Bloodborne Pathogens Standard indicating that the employee has been informed of any medical conditions resulting from exposure that require further evaluation or treatment. All other findings or diagnoses will remain confidential and will not be included in the report.

6. HAZARD COMMUNICATION

- A. Fluorescent red or orange-red warning labels bearing the universal biohazard symbol and the legend BIOHAZARD must be firmly affixed to all containers (e.g. waste cans, sharps containers, and refrigerators) used for the storage or shipment of blood or other potentially infectious materials.
- B. All employees designated to perform tasks involving occupational exposure shall receive bloodborne pathogens training at the time of initial assignment to the job. This training will be given during working hours and at no cost to employees. Refresher courses will be provided annually and if new tasks or procedures are implemented. Material appropriate in content and vocabulary to education level, literacy, and language of the employees shall be used for all required training. The Division Health & Safety Representatives will be the qualified instructors for the training classes.

Training will include: making accessible a copy of the regulatory text of the standard and explanation of its contents, general discussion on bloodborne diseases and their transmission, exposure control plan, engineering and work



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practice controls, personal protective equipment, hepatitis B vaccine, response to emergencies involving blood, how to handle exposure incidents, the post-exposure evaluation and follow-up program, signs/labels/color-coding, and question and answer time with the trainer.

7. EXPOSURE INCIDENT INVESTIGATION

The site Health & Safety Representative will review the circumstances of any exposure incident to determine corrective actions. The incident report will include:

- A. Engineering controls in use at the time
- B. Work practices followed
- C. A description of any equipment being used
- D. A description of the work being performed
- E. PPE that was used at the time of the incident
- F. Date, time, and location of the incident
- G. Employee's training

Within 24 hours, a copy of this incident report will be forwarded to the Occupational Health Specialist and Division Health & Safety Manager who will evaluate what follow-up actions should be addressed, including if revisions need to be made to the Exposure Control Plan.

8. RECORDKEEPING

- A. The Occupational Health Specialist will be responsible for establishing and maintaining accurate, confidential workers' compensation medical records for each employee with occupational exposure for the duration of employment plus 30 years in accordance with OSHA 29 CFR 1910.1020 "Access to Employee Exposure and Medical Records".
- B. The Division Health & Safety Manager will be responsible for maintaining the bloodborne pathogens training class records for at least 3 years from the date of training. The records will include the date of the training class, a summary of the class contents, the names of the qualified instructors, and the names and job titles of person attending the training.
- C. Employee medical records will be made available to employees (or their designated representative) with written consent by the employee within 15 working days of request.



Health and Safety Program

Attachment 51-1

**BLOODBORNE PATHOGENS
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- D. An exposure incident will be evaluated by the Occupational Health Specialist and Corporate Health & Safety Managers to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904).

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Health and Safety Training

1. Applicability

This SMS applies to all URS personnel. These are the minimum Environmental, Health and Safety (EHS) compliance training requirements and tracking procedures. Specific geographic entities, business units, and projects may require additional training. These requirements may be dictated by federal/national, state/provincial or local agencies or by the activities of a specific work group or project team. Each location or project manager is responsible for ensuring documentation and informing employees of these additional requirements.

2. Purpose and Scope

This SMS was developed to assist employees and managers in the identification of training requirements and to define the URS procedures for tracking/documenting this training. It covers environmental, hazardous materials, and health and safety training only. The goals of this program are to ensure regulatory compliance and to provide employees with the information/training they need to accomplish their work assignments safely, prevent injuries to themselves, coworkers, surrounding communities and clients, and to protect company property and the environment.

3. Implementation

- | | |
|---|--|
| Location | Location Manager is responsible for ensuring compliance with this program and any additional requirements necessary because of the physical location of the facility, and/or the business units in operation at that facility (e.g., laboratories). |
| Projects | Project Manager is responsible for ensuring project-related compliance (e.g., compliance of project staff members) with this program and any additional training necessary because of specific project activities. |
| Corporate HS Training Coordinator (CTC) | The CTC is responsible for maintaining the corporate training calendar, filing original records/tests, issuing certificates, maintaining and issuing corporate training materials, helping to develop materials that meet requirements, adding approved courses and course information to the corporate training database, updating the intranet site with course information. |

4. Requirements

Employee training requirements are dictated by the work each employee performs (or are expected to perform) and the geographic area(s) where they perform these activities. In most cases there is a regulatory driver for specific training. Attachment 55-1 shows a decision tree designed to help employees and managers determine training requirements.

- A. Health & Safety Orientation: All URS employees must be informed as to existence of and basic content of the URS Health and Safety Program. Locations will have the option of selecting the appropriate method of delivery but the content of this orientation must include at a minimum:

URS SAFETY MANAGEMENT STANDARD

Health and Safety Training

1. Review of the URS EHS policy statement
2. The Management System
3. The URS H&S Organization
4. Overview of the Safety Management Standards and Hazard Assessment Process
5. Incident Reporting (SMS 049)

Based on job assignment, additional training covered during this orientation:

6. Office Ergonomics (SMS 054)
7. Hazard Communication (US) or WHMIS (Canada)
8. Emergency Procedures (emergency action plans, evacuation plans, fire alarms, gathering points, emergency communications)

B. Table 1 contains a list of the most common courses that may be required, their frequency, and expected participants. This table will be updated as regulatory and company requirements change.

TABLE 1

Course Title	Regulatory Requirement	Frequency	Audience	Comments
Hazardous Waste Operations (40-Hrs - U.S.) (24-Hrs- non U.S.)	Y	Once	Anyone performing work or expected to perform at hazardous waste sites or treatment, storage, and disposal facilities	
Hazardous Waste Operations – Refresher (8 Hrs - U.S.) (4 Hrs - non-U.S.))	Y	Annually	(See above)	
Hazardous Waste Operations – Supervisor (8 Hrs)	Y	Once	Required for anyone serving as the site supervisor at a hazardous waste site.	
Field Safety (4 Hrs)	N	Biennially	Required for all URS non-craft employees performing field work that are not in hazardous waste training program.	Specific content will depend on the office and the employees' expected work.
Health & Safety Orientation	Y	Once	Required for all URS employees.	Specific content will depend on the office and the employees' expected work.
Respiratory Protection	Y	Annually	Required for any employee who may be required to wear a respirator.	Initial training is approximately 1 hr. Annually refresher training and fit testing is approximately .5 hrs.

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Health and Safety Training

Course Title	Regulatory Requirement	Frequency	Audience	Comments
Hazardous Materials Shipping ¹	Y	Biennially	Required for anyone who packages, labels, transports, completes paperwork for, or offers for shipment, hazardous materials/dangerous goods	
Bloodborne Pathogens ¹	Y	Annually	Required for anyone designated as a first aid responder or others who have a potential bloodborne pathogen exposure.	
First Aid	N	Biennially	Required for Hazardous Waste Site Safety Officers and personnel at remote sites (e.g., no local emergency medical response).	
Hazard Communication ¹	Y	Initially and if hazards change	Required for anyone who is potentially exposed to/works with hazardous chemicals	Training must occur before any work with hazardous chemicals. Included (as needed) in H&S Orientation. After the initial training, required updates will typically be handled as part of project specific H&S training.

¹This material is covered in the Hazardous Waste Operations initial and annually refresher courses, however individuals who are not Hazardous Waste Operations staff may be required to take one or more of these courses based on their work activities and as required by federal regulations.

- C. Attachment 55-1 is a tool used to identify *additional* training requirements. These requirements may be necessary due to the individual's project or office activities, or the location of the facility. The responses to this simple questionnaire dictate what training an individual needs above and beyond the basic URS courses. Each employee, once these requirements have been identified, is expected to complete the required training as soon as possible and to track his/her progress.
- D. Training requirements should be re-evaluated at least annually and more frequently if an employee's assigned duties change significantly.
- E. To ensure consistency in content and duration and in meeting regulatory and company requirements, corporate training materials should be used as the base materials whenever they are available. Trainers may always elect to supplement the base corporate training materials for these courses with project/office/geographic unit specifics.
- F. For training requiring certifications (regulatory or corporate) trainers must be regional or divisional H&S Managers or be approved by the Corporate Health and Safety Director. This training includes but is not limited to, Hazardous Waste Health and Safety courses and Field Safety Training.
- G. Training is offered in a variety of formats including classroom instruction, computer-based training (CBT), and on-the-job (OTJ) training. To ensure consistency and that all requirements are being met, external courses (e.g., 40 Hour HAZOPWER) including classroom instruction and CBT should be evaluated and approved by the Corporate Health and Safety Director or a designee (e.g., Divisional or Regional H&S

URS SAFETY MANAGEMENT STANDARD **Health and Safety Training**

Manager). Local, regional or divisional H&S staff will be able to assist in identifying qualified external vendors when the need arises.

- H. Internal training course schedules will be posted on the Health and Safety intranet site at <http://healthandsafety.com/>.
- I. URS staff is expected to be familiar with applicable training requirements. In addition to the corporate training tracking. Staff members are expected to track their own progress toward meeting those requirements.

5. Documentation Summary

- A. Those courses shown in Table 1 will be tracked in a corporate training database. These courses were selected for a variety of reasons including:
 - 1. Audits/compliance checking
 - 2. Written certification requirements
 - 3. Easy access to qualified individuals for project/office staffing purposes
- B. All training must be documented using Training Attendance form (Attachment 55-2) and Course Agenda. Minimum course agenda requirements include:
 - Type of course
 - Course date
 - Course location
 - Topics covered
 - Length of time covered for each topic
 - Course duration (start / end times)
 - Instructor(s) name
- C. For client/vendor provided training, training documentation must include:
 - Copy of the attendee's course certificate
 - Course agenda
- D. Divisional H&S Managers will ensure the course agenda meet regulatory/company requirements. The Corporate H&S Training Coordinator will then enter attendance records in the corporate training database.

URS SAFETY MANAGEMENT STANDARD **Health and Safety Training**

- E. Original attendance sheets, agendas, and any completed tests will be sent to the Corporate H&S Training Coordinator. These should be filed by course then by date for easy access/auditing.
- F. Locations/projects will maintain records on any project or location specific training requirements such as fire extinguisher training, project H&S plan training, and chemical hygiene program (laboratory safety) training. They may optionally elect to maintain copies of attendance records for courses also being tracked corporately.
- G. For courses requiring certification, certificates will be issued by the Corporate Health and Safety Director, unless the certificate is issued by a vendor or client. Under those conditions a copy of the certificate must be provided to the Corporate H&S Training Coordinator (along with course content information and sign in sheets).
- H. Managers (local, regional, project) can access the information for staffing and compliance purposes through the Divisional H&S Managers or Corporate H&S Training Coordinator. Divisional H&S Managers will have "read only" access to the corporate training database.

6. References

The following are sites that provide additional information to assist you in identifying training requirements.

- A. OSHA website training section (U.S. Regulatory Requirements)
<http://www.osha-slc.gov/Training/>
- B. National Occupational Health and Safety Commission (Australia)
<http://www.nohsc.gov.au/work/education/index.htm>
- C. European Agency for Safety and Health at Work
<http://europe.osha.eu.int/training/>
- D. Additional Training Requirements Evaluation - Attachment 55-1
- E. Training Attendance Form - Attachment 55-2

URS SAFETY MANAGEMENT STANDARD

Drilling Safety Guidelines

1. Applicability

This program applies to URS projects in which truck-mounted, or other engine powered, drill rigs are used. It is applicable to URS employees and URS owned rigs. For drill rigs operated by contractors, the primary responsibility for drilling safety is with the drilling contractor.

2. Purpose and Scope

The purpose of these guidelines is to provide an overview for working safely around drilling operations with truck-mounted and other engine-powered drill rigs. The procedure addresses off-road movement of drill rigs, overhead and buried utilities, use of augers, rotary and core drilling, and other drilling operations and activities.

3. Implementation

Field Activities Drill rig safety and maintenance is the responsibility of the drill rig operator. URS employees are responsible for their own safety including recognizing and avoiding drill rig hazards. URS employees that observe a drill rig condition believed to be unsafe shall advise the drill rig operator of the unsafe condition.

4. Safety Guidelines

A. General Guidelines

URS technicians, geologists, engineers, or other field staff assigned to observe drilling operations or collect soil samples should observe the following guidelines:

- Require a meeting at project start-up regarding the drill rig operator responsibility for rig safety and any site and equipment specific safety requirements
- Set up any sample tables and general work areas for the URS field staff to the side of the drill rig (preferably 10 meters away) and not directly behind the rig.
- URS engineers, technician, and geologists shall not assist the drillers with the drilling equipment or supplies and shall not at any time operate the drill rig controls.

B. Movement of Drill Rigs

Before moving a rig, the operator must do the following:

URS SAFETY MANAGEMENT STANDARD

Drilling Safety Guidelines

- To the extent practical, walk the planned route of travel and inspect it for depressions, gullies, ruts, and other obstacles.
- Check the brakes of the truck/carrier, especially if the terrain along the route of travel is rough or sloped.
- Discharge all passengers before moving on rough or steep terrain.
- Engage the front axle (on 4x4, 6x6, etc. vehicles) before traversing rough or steep terrain.

Driving drill rigs along the sides of hills or embankments should be avoided; however, if side-hill travel becomes necessary, the operator must conservatively evaluate the ability of the rig to remain upright while on the hill or embankment. The possibility must be considered that the presence of drilling tools on the rig may reduce the ability of the rig to remain upright (raises the center of mass of the rig).

Logs, ditches, road curbs, and other long and horizontal obstacles should be normally approached and driven over squarely, not at an angle.

When close lateral or overhead clearance is encountered, the driver of the rig should be guided by another person on the ground.

Loads on the drill rig and truck must be properly stored while the truck is moving, and the mast must be in the fully lowered position.

After the rig has been positioned to begin drilling, all brakes and/or locks must be set before drilling begins. If the rig is positioned on a steep grade and leveling of the ground is impossible or impractical, the wheel of the transport vehicle should be blocked and other means of preventing the rig from moving or topping over employed.

C. Buried and Overhead Utilities

The location of overhead and buried utility lines must be determined before drilling begins, and the locations should be noted on boring plans and/or assignment sheets.

When overhead power lines are close by, the drill rig mast should not be raised unless the distance between the rig and the nearest power line is at least 20 feet (7 meters) or other distance as required by local ordinances, whichever is greater. The drill rig operator or assistant should walk completely around the rig to make sure that proper distance exists.

When the drill rig is positioned near an overhead line, the rig operator should be aware that hoist lines and power lines can be moved towards each other by wind. When necessary and approved by the Project

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Drilling Safety Guidelines

Manager (PM), the utility and/or power lines may be shielded, shut down, or moved by the appropriate personnel.

For additional information, please refer to SMS #34 "Utility Clearances and Isolation".

D. Clearing the Work Area

Before a drill rig is positioned to drill, the area on which the rig is to be positioned should be cleared of removable obstacles and the rig should be leveled if sloped. The cleared/leveled area should be large enough to accommodate the rig and supplies.

E. Safe Use of Augers

Never place hands or fingers under the bottom of an auger flight or drill rods when hoisting the augers or rods over the top of another auger or rod in the ground or other hard surfaces, such as the drill rig platform.

Never allow feet to get under the auger or drill rod while they are being hoisted.

When the drill is rotating, stay clear of the drill string and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason.

Move auger cuttings away from the auger with a long-handled shovel or spade; never use hands or feet.

Never clean an auger attached to the drill rig unless the transmission is in neutral or the engine is off, and the auger has stopped rotating.

Do not wear loose clothing or jewelry while working near the drill rig. Long hair must be pulled back to avoid entanglement with moving parts.

Hearing protection is required when working near an operating drill rig.

F. Safe Use of Hand Tools

Regulations regarding hand tools should be observed in addition to the guidelines provided below:

- Each tool should be used only to perform tasks for which it was originally designed.
- Damaged tools should be repaired before use or discarded.
- Safety goggles or glasses should be worn when using a hammer or chisel. Nearby co-workers and by-standers should be required to wear safety goggles or glasses also, or move away.

URS SAFETY MANAGEMENT STANDARD

Drilling Safety Guidelines

- Tools should be kept cleaned and stored in an orderly manner when not in use.

G. Safe use of Wire Line Hoists, Wire Rope, and Hoisting Hardware

Safety rules described in Title 29 Code of Federal Regulations (CFR) 1926.552 and guidelines contained in the Wire Rope User's Manual published by the American Iron and Steel Institute shall be used whenever wire line hoists, wire rope, or hoisting hardware are used. The driller should provide written reports (upon request) documenting inspections of equipment.

H. Traffic Safety

Drilling in streets, parking lots or other areas of vehicular traffic requires definition of the work zones with cones, warning tape, etc. and compliance with local police requirements.

I. Fire Safety

- Fire extinguishers (type ABC) shall be kept on or near drill rigs for fighting small fires.
- If methane or other flammable gases or vapors are suspected in the area, a combustible gas indicator (CGI) shall be used to monitor the air near the borehole with all work to stop at 20 percent of the Lower Explosive Limit (LEL).
- Work shall stop during lightning storms.

J. Protective Gear

1. Minimum Protective Gear

Items listed below should be worn by all staff working within 30 feet (10 meters) of drilling activities.

- Hearing Protection;
- Hard Hat;
- Eye Protection (safety glasses, goggles, or face-shield)
- Safety Shoes (shoes or boots with steel toes)

URS SAFETY MANAGEMENT STANDARD

Drilling Safety Guidelines

2. Other Gear

Items listed below should be worn when conditions warrant their use. Some of the conditions are listed after each item.

- **Safety Harnesses and Lifelines:** Safety harnesses and lifelines shall be worn by all persons working on top of an elevated derrick beam or mast. The lifeline should be secured at a position that will allow a person to fall no more than six feet (2 meters). OSHA Fall Protection (1926 Subpart M) requirements apply.
- **Life Vests:** Use for work over water.

5. Resources

- A. International Association of Drilling Contractors Safety Alerts
<http://iadc.org/alerts.htm>
- B. Fall Protection - SMS 040
- C. Hearing Conservation - SMS 026
- D. Subcontractor Health and Safety Requirements - SMS - 046
- E. Utility Clearances and Isolation - SMS 034

URS SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

1. Applicability

This procedure applies to URS Corporation domestic U.S. operations.

2. Purpose and Scope

The purpose of this procedure is to reduce the risk of injury to URS employees and control liability related to vehicle accidents.

This SMS applies to employees operating motor vehicles that are owned, rented or leased by the Company, and the use of personal vehicles while on company business.

This SMS does not apply to heavy equipment operations (see SMS 019).

3. Implementation

The overall responsibility for program implementation is with the URS Health and Safety Director. Other responsibilities include:

Administration - Fleet management, vehicle acquisition, insurance, claims reporting, controlling access to vehicles, maintenance of vehicles, participating on accident review committee.

Human Resources - Documentation of driver's license, discipline.

Health and Safety - Employee safety training, maintenance of the vehicle safety program, participation on the accident review committee.

Employee - Familiarization with URS Vehicle Safety Program, compliance with its requirements.

4. Requirements

A. Authorized Drivers

1. Authorized Drivers are those individuals permitted to drive URS owned, leased, or rented vehicles. Employees that only operate rental cars obtained on a daily basis through URS National Service Agreements are not required to be designated as Authorized Drivers.
2. Must be at least 18 (non-commercial license) or 21 (commercial license) years of age and have a current driver's license for the appropriate class of vehicle (unless more stringent requirements are established by the leasing/renting agency).
3. Human Resources and Office Administrators requires new employees and current employees (on an annual basis), designated as Authorized Drivers, to provide a copy of their driver's license. Authorized drivers who lose their license through legal action must notify their Human Resources

URS SAFETY MANAGEMENT STANDARD
Vehicle Safety Program

Representative immediately. The Human Resources Representative will notify the Fleet Manager.

4. The Company may suspend the privilege to operate vehicles on Company business due to non-compliance with the URS Vehicle Safety Program, involvement in a motor vehicle accident, or motor vehicle violations.
5. Authorized drivers must review the Vehicle Safety Program (SMS 057) and sign the Drivers Information form (Attachment 57-2).
6. Non-URS employees (e.g., subcontractors, alliance partners) may operate URS vehicles only when this activity is specifically agreed to in the applicable contract.

B. Training

1. Authorized Drivers shall be provided basic driver safety training, including a review of the URS Vehicle Safety Program (SMS 057) and video or on-line training, within 6 months of the effective date of this SMS or within 3 months of their hire date.
2. The Accident Review Committee may require additional training for select employees based on accident involvement.

C. General Operating Policy and Procedure (Applies to Authorized and Non-Authorized Drivers Operating Motor Vehicles on Official Company Business)

1. Company owned/rented/leased motor vehicles may be operated only by properly licensed employees who are specifically authorized to drive company vehicles.
2. Authorized drivers required to operate vehicles with special hazards (i.e. trucks carrying fuel cells, vehicles used to tow trailers, vehicles with limited visibility, etc.) shall be thoroughly briefed on the hazards and control measures necessary for safe operation of the vehicle. The local office shall maintain documentation of the briefing.
3. Drivers/operators shall know and obey all federal, state and local motor vehicle laws applicable to the operation of their vehicle.
4. A driver shall not permit unauthorized persons to operate a Company-owned/rented/leased vehicle.
5. URS policy regarding reimbursement and insurance coverage requirements for use of personal automobiles may be found in the Policy and Procedures Manual (Section 074.020).
6. Cell phone use while driving requires use of a hands-free device (e.g., headset or speakerphone), the vehicle must be stopped when the operator performs an activity that requires diverting attention from the operation of the vehicle (i.e. dialing calls).

URS SAFETY MANAGEMENT STANDARD
Vehicle Safety Program

7. Company owned/rented/leased vehicles are for official business use only and are not to be used for personal activities.
8. Seat belts and shoulder harnesses (occupant restraint systems) shall be worn or used whenever the vehicle is in operation. The vehicle may not move until all passengers have fastened their restraints.
9. When parking or leaving a vehicle, the following procedures must be followed: Shut off the engine, engage the transmission in park (automatic transmission) or first gear (standard transmission), set the parking brake, remove the ignition keys, and lock the vehicle.
10. The vehicle's engine is to be turned off during refueling. Smoking or cell phone use is not allowed while refueling.
11. Drivers/operators will not drive or operate vehicles while under the influence of alcohol or illegal drugs. Further details on the URS Substance Abuse Policy may be found in the Policy and Procedure Manual (section 034.030).
12. Drivers/operators will not drive or operate vehicles while under the influence of medications when told by a physician, another healthcare provider, or the manufacturer (i.e. instructions on the label) that the activity is unsafe.
13. Vehicle operators are responsible for any fines levied by law enforcement agencies for the operation of their vehicles.
14. Articles, tools, equipment, etc. placed in vehicles shall be stored as not to interfere with vision or the proper operation of the vehicle in any way. This also includes preventing items from flying about or out of the vehicle during sudden stops, turning, etc.
15. Trucks or vehicles with obstructed rear-view mirrors must observe the following procedures when backing up: Position an employee to act as a spotter at the rear of the vehicles, in the driver's line of sight, to ensure that the area behind the truck is clear. If no other employee is present, then the driver must step out of the vehicle and check the area behind the vehicle before backing up. As an added precaution, avoid backing up whenever possible.
16. Driver/operators may not deactivate or muffle any backup warning device.
17. All cargo extending 4 feet or more beyond the end of a truck, trailer or similar vehicle shall be clearly marked with a red warning flag or cloth measuring no less than 16 inches square. Red lights must be used at night.

D. Field Site Vehicle Safety

1. Define specific vehicle travel routes and parking areas at field sites. Use fencing, cones or other markings to define roads and parking.
2. If parking on the shoulder of an active road, park as far off the road as possible.

URS SAFETY MANAGEMENT STANDARD
Vehicle Safety Program

3. If work is required alongside an active road (e.g., surveying) park the vehicle behind the area of work to provide a barrier against out-of-control vehicles.
4. URS will not transport DOT-placard quantities of hazardous materials. However, small quantities of hazardous materials (e.g., sample coolers) may be transported if properly packaged. Be careful to prevent chemical contamination of the vehicle. Further details on DOT shipping may be found in the DOT Shipping SMS 048.
5. Nuclear density meters (e.g., Troxler units) may be transported only by employees who have been trained in the use of nuclear density meters (see SMS 044). Nuclear density meters must be secured from movement and locked during transport. NRC and state-specific regulations regarding transport documentation also apply.
6. When performing fieldwork requiring the blocking of traffic lanes (e.g., bridge inspection), follow URS SMS 032, the Manual on Uniform Traffic Control Devices for Streets and Highways (ANSI D6.1) and local police requirements for barriers, cones, and flaggers.
7. No employee may ride in the bed of a pickup truck unless seating and restraints are provided for this specific use.

E. Accident Response and Reporting

1. In case of injury, call or have someone else call, 9 1 1 immediately for emergency assistance. If you are involved in an accident and are not injured, do the following:
 - a. Protect the accident scene
 - b. Do not admit liability or place any blame for the accident
 - c. Provide only your name, address, driver's license number, and vehicle insurance information.
 - d. Obtain the following:
 - i. name(s), addresses, and telephone number(s) of the owner
 - ii. driver and occupants of other vehicle(s)
 - iii. the owner's insurance company
 - iv. driver's license number
 - v. year, make, model and license number of the vehicle(s)
 - vi. name(s) and addresses of any witnesses
 - e. **DO NOT:**
 - Call the insurance company; the Fleet Manager's office will do this (unless the incident involves your personal vehicle)
 - Give a statement to the press

URS SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

- Give a signed statement to the claims adjuster representing the other driver's insurance company

NOTE: The Auto Claim Report (Attachment 57-1) for Company-leased or owned vehicles is located in the vehicle glove compartment. The driver must complete this form at the scene of the accident and submit it to management.

2. Notification

All accidents with a Company-leased, rented, or owned vehicle must be reported to your Office/Branch Manager/Supervisor and Fleet Manager within 24-hours of the time it occurs. Use the Auto Claim Report (Attachment 57-1) for this purpose. The Fleet Administrator will report the accident to the insurance carrier (leased and owned vehicles only) within 48 hours of when it occurred.

F. Accident Review Committee

1. The Fleet Manager will review all accidents involving URS-owned, rented or leased vehicles. Accidents involving any of the following will result in immediate disciplinary action in coordination with Human Resources:
 - a. Driving under the influence of alcohol or illegal drugs
 - b. Reckless driving
 - c. Driving without a license
 - d. Hit-and-run driving
 - e. Repeat accidents involving the same employee,
 - f. Unauthorized use of company vehicles.
2. Disciplinary action includes possible:
 - a. Loss of URS driving privileges
 - b. Additional driver safety training
 - c. Suspension without pay
 - d. Termination
3. The Accident Review Committee will review those accidents referred by the Fleet Manager or by employees appealing disciplinary action.
4. The Accident Review Committee will include one representative from each of the following:
 - a. Corporate Administration
 - b. Corporate Health and Safety
 - c. Corporate Human Resources
 - d. Operations

URS SAFETY MANAGEMENT STANDARD
Vehicle Safety Program

G. Inspection

1. The driver is responsible for inspecting the vehicle prior to use and not driving a vehicle with obvious safety defects.
2. Basic safety checks must include:
 - a. Tire condition/pressure
 - b. Lights/turn signals
 - c. A clean windshield and adequate window washer fluid
 - d. Gauges/warning lights indicating a normal condition
 - e. Mirrors properly adjusted
 - f. Brakes with adequate pedal pressure for proper braking
3. Any defects must be reported to the local office Fleet Representative/Office Administrator.

H. Vehicle Maintenance

1. The Office Administrator (or designee) is to ensure that all URS-leased/owned vehicles are properly maintained.
2. Routine maintenance must be performed in accordance the schedule provided in the owner's manual stored in the vehicle.
3. Reported defects/problems with vehicles must be repaired promptly.

5. Documentation Summary

- A. Auto Claim Report - (Attachment SMS 57-1)
- B. Driver's Information - (Attachment SMS-57-2)

6. References

The following sites provide additional information to assist you:

- A. National Safety Council; Information on Defensive Driving Courses
<http://www.nsc.org/psg/ddc.htm>
- B. AAA Foundation for Traffic Safety
<http://www.aaafoundation.org/>

WITHOUT PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: NONE

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Reactivity Data

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Stability: YES
Cond To Avoid (Stability): NONE
Materials To Avoid: STRONG ACIDS.
Hazardous Decomp Products: MAY RELEASE CARBON DIOXIDE GAS ON BURNING.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

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Health Hazard Data

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LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INHALATION OF POWDER MAY PROVE LOCALLY
IRRITATING TO MUCOUS MEMBRANES. INGESTION MAY CAUSE DISCOMFORT.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT APPLICABLE
Signs/Symptoms Of Overexp: INGESTION MAY CAUSE DIARRHEA.
Med Cond Aggravated By Exp: RESPIRATORY CONDITIONS.
Emergency/First Aid Proc: EYES: FLUSH WITH PLENTY OF WATER FOR 15 MIN.
SKIN: FLUSH WITH PLENTY OF WATER. INGESTION: DRINK LARGE QUANTITIES OF
WATER. GET MEDICAL ATTENTION FOR DISCOMFORT.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: MATERIAL FOAMS PROFUSELY. SHOVEL AND RECOVER
AS MUCH AS POSSIBLE. RINSE REMAINDER TO SEWER. MATERIAL IS COMPLETELY
BIODEGRADABLE.
Neutralizing Agent: NONE
Waste Disposal Method: SMALL QUANTITIES MAY BE DISPOSED OF IN SEWER. LARGE
QUANTITIES SHOULD BE DISPOSED OF ACCORDING TO LOCAL REQUIREMENTS FOR
NON-HAZARDOUS DETERGENTS.
Precautions-Handling/Storing: STORE IN A DRY AREA TO PREVENT CAKING.
Other Precautions: NO SPECIAL REQUIREMENTS OTHER THAN THE GOOD INDUSTRIAL
HYGIENE AND SAFETY PRACTICES EMPLOYED WITH ANY INDUSTRIAL CHEMICAL.

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Control Measures

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Respiratory Protection: DUST MASK.
Ventilation: NORMAL LOCAL EXHAUST.
Protective Gloves: USEFUL BUT NOT REQUIRED.
Eye Protection: USEFUL BUT NOT REQUIRED.
Other Protective Equipment: NONE REQUIRED.
Work Hygienic Practices: NO SPECIAL PRACTICES REQUIRED.
Suppl. Safety & Health Data: NONE

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Transportation Data

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Trans Data Review Date: 91338
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Additional Trans Data: NONE

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Disposal Data

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Label Data

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Label Required: YES
Technical Review Date: 04DEC91
Label Date: 04DEC91
Label Status: F
Common Name: ALCONOX
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: INHALATION OF POWDER MAY PROVE LOCALLY
IRRITATING TO MUCOUS MEMBRANES. INGESTION MAY CAUSE DISCOMFORT. STORE IN A
DRY AREA TO PREVENT CAKING. FIRST AID: EYES: FLUSH WITH PLENTY OF WATER FOR
15 MIN. SKIN: FLUSH WITH PLENTY OF WATER. INGESTION: DRINK LARGE QUANTITIES
OF WATER. GET MEDICAL ATTENTION FOR DISCOMFORT.
Protect Eye: Y
Protect Respiratory: Y
Label Name: ALCONOX INC.
Label Street: 215 PARK AVE SOUTH
Label City: NEW YORK
Label State: NY
Label Zip Code: 10003-1603
Label Country: US
Label Emergency Number: 212-473-1300

AIR LIQUIDE AMERICA CORP-FMLY BIG THREE INDUS -- ISOBUTYLENE - CALIBRATION GAS CYLI
MATERIAL SAFETY DATA SHEET

NSN: 6665012148247

Manufacturer's CAGE: 17688

Part No. Indicator: A

Part Number/Trade Name: ISOBUTYLENE

General Information

Item Name: CALIBRATION GAS CYLINDER

Company's Name: AIR LIQUIDE AMERICA CORP-FMLY BIG THREE INDUSTRIES

Company's Street: 3535 W 12TH ST

Company's P. O. Box: 3047

Company's City: HOUSTON

Company's State: TX

Company's Country: US

Company's Zip Code: 77253

Company's Emerg Ph #: 800-424-9300 CHEMTREC

Company's Info Ph #: 713-868-0440 FAX: 800-231-1366

Distributor/Vendor # 1: HNU SYSTEMS INC

Distributor/Vendor # 1 Cage: 57631

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 005

Status: SE

Date MSDS Prepared: 20FEB97

Safety Data Review Date: 19AUG97

Supply Item Manager: CX

MSDS Preparer's Name: UNKNOWN

Preparer's Company: CHEMICAL SAFETY ASSOCIATES, INC.

Preparer's St Or P. O. Box: 9163 CHESAPEAKE DR

Preparer's City: SAN DIEGO

Preparer's State: CA

Preparer's Zip Code: 92123-1002

MSDS Serial Number: CFCVY

Specification Number: NONE

Spec Type, Grade, Class: NONE

Hazard Characteristic Code: G3

Unit Of Issue: EA

Unit Of Issue Container Qty: 0.6 LB

Type Of Container: CYLINDER

Net Unit Weight: 0.6

Ingredients/Identity Information

Proprietary: NO

Ingredient: ISOBUTYLENE (CYLINDER CONTAINS 75 PPM IN AIR).

Ingredient Sequence Number: 01

Percent: <1

NIOSH (RTECS) Number: UD0890000

CAS Number: 115-11-7

OSHA PEL: NOT ESTABLISHED

ACGIH TLV: NOT ESTABLISHED

Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO

Ingredient: AIR

Ingredient Sequence Number: 02

Percent: 99

NIOSH (RTECS) Number: 1005486AI

OSHA PEL: NOT ESTABLISHED

ACGIH TLV: NOT ESTABLISHED

Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

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Appearance And Odor: COLORLESS GAS: ODOR SIMILAR TO BURNING COAL.
 Boiling Point: 19.6F,-6.9C
 Melting Point: -220F,-140C
 Vapor Pressure (MM Hg/70 F): 1233
 Vapor Density (Air=1): 0.15LB/FT3
 Specific Gravity: 1.997
 Evaporation Rate And Ref: NOT APPLICABLE
 Solubility In Water: INSOLUBLE
 Autoignition Temperature: 869F

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Fire and Explosion Hazard Data

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Flash Point: 14F,-10C
 Lower Explosive Limit: 1.8
 Upper Explosive Limit: 9.6
 Extinguishing Media: SHUT OFF SOURCE OF GAS. USE WATER SPRAY TO COOL FIRE EXPOSED CYLINDERS, STRUCTURES AND EQUIPMENT.
 Special Fire Fighting Proc: STRUCTURAL FIREFIGHTERS MUST WEAR SELF-CONTAINED BREATHING APPARATUS. BECAUSE OF DANGER OF BLEVE, EVACUATION OF NON-EMERGENCY PERSONNEL IS ESSENTIAL.
 Unusual Fire And Expl Hazrds: DANGER! FIRES IMPINGING ON OUTSIDE SURFACE OF UNPROTECTED CYLINDERS CAN BE VERY DANGEROUS. EXPOSURE TO FIRE CAN CAUSE CATASTROPHIC FAILURE OF THE CYLINDER.

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Reactivity Data

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Stability: YES
 Cond To Avoid (Stability): CONTACT WITH INCOMPATIBLE MATERIALS AND EXPOSURE TO HEAT, SPARKS, OTHER SOURCES OF IGNITION.
 Materials To Avoid: STRONG OXIDIZING AGENTS (EG. CHLORINE, BROMINE PENTAFLUORIDE, OXYGEN, OXYGEN DIFLUORIDE, NITROGEN TRIFLUORIDE).
 Hazardous Decomp Products: WHEN IGNITED IN PRESENCE OF OXYGEN-CARBON MONOXIDE AND CARBON DIOXIDE.
 Hazardous Poly Occur: NO
 Conditions To Avoid (Poly): WILL NOT OCCUR.

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Health Hazard Data

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LD50-LC50 Mixture: LC50 (INHALATION, RAT)-620,000 MG/KG/4HR
 Route Of Entry - Inhalation: YES
 Route Of Entry - Skin: NO
 Route Of Entry - Ingestion: NO
 Health Haz Acute And Chronic: ISOBUTYLENE MAY CAUSE SOME IRRITATION OF MUCCOUS MEMBRANES. IN ADDITION, CONTACT WITH RAPIDLY EXPANDING GASES CAN CAUSE FROSTBITE TO EXPOSED TISSUE. ISOBUTYLENE IS NOT KNOWN TO CAUSE SENSITIZATION IN HUMANS. CURRENTLY, BIOLOGICAL EXPOSURE INDICES (BEI'S) ARE NOT APPLICABLE FOR ISOBUTYLENE.
 Carcinogenicity - NTP: NO
 Carcinogenicity - IARC: NO
 Carcinogenicity - OSHA: NO
 Explanation Carcinogenicity: ISOBUTYLENE IS NOT FOUND ON THE FOLLOWING LISTS: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA.
 Signs/Symptoms Of Overexp: IRRITATION OF MUCCOUS MEMBRANES; FROSTBITE TO EXPOSED TO TISSUE.
 Med Cond Aggravated By Exp: ACUTE OR CHRONIC RESPIRATORY CONDITIONS MAY BE AGGRAVATED BY OVEREXPOSURE TO THE COMPONENTS OF THIS PRODUCT.
 Emergency/First Aid Proc: ADMINISTER OXYGEN, IF NECESSARY; TREAT SYMPTOMS; REDUCE OR ELIMINATE EXPOSURE.

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: EVACUATE IMMEDIATE AREA. UNCONTROLLED

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RELEASES SHOULD BE RESPONDED TO BY TRAINED PERSONNEL USING PRE-PLANNED PROCEDURES. PROPER PROTECTIVE EQUIPMENT SHOULD BE USED. IN CASE OF GAS RELEASE, CLEAR THE AFFECTED AREA, PROTECT PEOPLE AND RESPOND.
 Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
 Waste Disposal Method: WASTE DISPOSAL MUST BE IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE AND FEDERAL REGULATIONS. RETURN CYLINDERS WITH ANY RESIDUAL PRODUCT TO AIR LIQUIDE. DO NOT DISPOSE OF LOCALLY.
 Precautions-Handling/Storing: STORE UPRIGHT & FIRMLY SECURED TO PREVENT FALLING OR BEING KNOCKED OVER. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM SOURCES OF HEAT.
 Other Precautions: KEEP STORAGE AREA CLEAR OF MATERIALS WHICH MAY BURN. DO NOT ALLOW AREA WHERE CYLINDERS ARE STORED TO EXCEED 125F (52C). STORE CYLINDERS AWAY FROM HEAVILY TRAFFICKED AREAS AND EMERGENCY EXITS. PROTECT AGAINST PHYSICAL DAMAGE.

Control Measures

Respiratory Protection: MAINTAIN OXYGEN LEVELS ABOVE 19.5% IN THE WORKPLACE. USE SUPPLIED AIR RESPIRATORY PROTECTION IF OXYGEN LEVELS ARE BELOW 19.5% OR DURING EMERGENCY RESPONSE TO A RELEASE OF THIS PRODUCT. FOLLOW 29 CFR 1910.134 OR EQUIVALENT STATE STANDARDS.
 Ventilation: USE EXPLOSION-PROOF LOCAL EXHAUST VENTILATION TO PREVENT ISOBUTYLENE CONCENTRATION FROM EXCEEDING LEL OF 1.8%.
 Protective Gloves: LEATHER GLOVES WHEN HANDLING CYLINDERS.
 Eye Protection: SAFETY GLASSES.
 Other Protective Equipment: USE BODY PROTECTION APPROPRIATE FOR TASK. COTTON CLOTHING RECOMMENDED TO PREVENT STATIC BUILD-UP.
 Work Hygienic Practices: WASH HANDS AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHES BEFORE REUSE.
 Suppl. Safety & Health Data: HNU P/N IS: 101-350-N. MSDS BY MFR WRITTEN FOR "PURE" ISOBUTYLENE; PHYSICAL & FIRE DATA AREAS ARE FOR PURE ISOBUTYLENE. THIS NSN IS FOR A CYLINDER CONTAINING 75-150 PPM (<1%) OF ISOBUTYLENE.

Transportation Data

Trans Data Review Date: 97231
 DOT PSN Code: DQQ
 DOT Proper Shipping Name: COMPRESSED GASES, N.O.S.
 DOT Class: 2.2
 DOT ID Number: UN1956
 DOT Label: NONFLAMMABLE GAS
 IMO PSN Code: EQH
 IMO Proper Shipping Name: COMPRESSED GAS, N.O.S. o
 IMO Regulations Page Number: 2124
 IMO UN Number: 1956
 IMO UN Class: 2(2.2)
 IMO Subsidiary Risk Label: -
 IATA PSN Code: HDO
 IATA UN ID Number: 1956
 IATA Proper Shipping Name: COMPRESSED GAS, N.O.S. *
 IATA UN Class: 2.2
 IATA Label: NON-FLAMMABLE GAS
 AFI PSN Code: HDO
 AFI Prop. Shipping Name: COMPRESSED GAS, N.O.S.
 AFI Class: 2.2
 AFI ID Number: UN1956
 AFI Basic Pac Ref: A6.3,A6.5,A6.7
 N.O.S. Shipping Name: CONTAINS ISOBUTYLENE AND AIR
 Additional Trans Data: CYLINDER CONTAINS 75-150 PPM ISOBUTYLENE IN AIR. WEIGHT OF GAS MIXTURE IN EACH CYLINDER IS 0.6 LBS. WT OF EMPTY CYLINDER IS 2.4 LBS.

Disposal Data

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Label Data
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Label Required: YES
Technical Review Date: 19AUG97
Label Status: F
Common Name: ISOBUTYLENE
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: CONTENTS UNDER PRESSURE! ISOBUTYLENE MAY CAUSE
SOME IRRITATION OF MUCOUS MEMBRANES. IN ADDITION, CONTACT WITH RAPIDLY
EXPANDING GASES CAN CAUSE FROSTBITE TO EXPOSED TISSUE. ISOBUTYLENE IS NOT
KNOWN TO CAUSE SENSITIZATION IN HUMANS. CURRENTLY, BIOLOGICAL EXPOSURE
RESPIRATORY SYSTEM. FIRST AID: ADMINISTER OXYGEN, IF NECESSARY; TREAT
SYMPTOMS; REDUCE OR ELIMINATE EXPOSURE.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AIR LIQUIDE AMERICA CORP-FMLY BIG THREE
INDUSTRIES
Label Street: 3535 W 12TH ST
Label P.O. Box: 3047
Label City: HOUSTON
Label State: TX
Label Zip Code: 77253
Label Country: US
Label Emergency Number: 800-424-9300 CHEMTREC
Year Procured: 1995



May 23, 2001

Ms. Karen Turner
City of Coos Bay
Dept. of Community Services
500 Central Avenue
Coos Bay, Oregon 97420

RECEIVED

JUN 04 2001

Environmental Cleanup Officer

Subject: Transmittal – Draft Phase II Environmental Site Assessment Work Plan
Brownfield Development Pilot Project

Dear Ms. Turner:

In accordance with our agreement, URS prepared the attached Draft Work Plan on behalf of the City of Coos Bay to conduct Phase II Environmental Site Assessments (Phase II ESAs) in the City of Coos Bay, Coos County, Oregon. If the City chooses to conduct the Phase II ESAs, these assessments will support the City of Coos Bay Brownfield Development Pilot Project for the Front Street Urban Renewal and Redevelopment Project - Waterfront Heritage District.

The Phase II Work Plan has two major components: Part I - Sampling and Analysis Plan (SAP) and Part II - Health and Safety Plan (HSP). The SAP presents the detailed scope of work associated with field activities (e.g., sample types and sample locations) and specifies the procedures for sampling and other field operations. The HSP describes the guidelines and requirements for URS personnel during the execution of the Phase II ESA field activities. The HSP identifies potential site hazards, lists project personnel and their responsibilities, and describes safety procedures and equipment.

The Phase II ESAs will address the recognized environmental conditions (RECs) identified in the reports for 13 of the 26 Phase I ESAs conducted by URS for the City of Coos Bay. RECs were not identified for the other sites. As described in the *Draft Work Plan, Phase I Environmental Site Assessments* (URS, February 2000), individual properties were ranked for possible follow-up Phase II ESAs based on the potential for on-site contamination. The enclosed Priority Ranking Tables list properties as either a high, medium, or low priority for Phase II assessments. The properties were ranked from highest to lowest based on potential for environmental contamination as indicated by the RECs identified in the respective Phase I ESAs. Two of the 13 sites recommended for follow-up Phase II ESAs (Coos Bay Towboat Company office and parking lot properties) were combined into one site, for a total of 12 Phase II ESAs.

URS prepared two separate cost estimates to conduct the Phase II ESAs on the 12 sites (see the enclosed Cost Estimate Tables). The two estimates consider alternative approaches for conducting the Phase II ESAs. The approach selected by the City of Coos Bay will depend on access, budget, and City priorities for additional assessment. The cost estimates are summarized as follows:

- **Individual Estimates** – Conduct Phase II assessments on 12 properties with RECs one property at a time. The cost assumes a separate mobilization and demobilization for each individual property.

URS Corporation
111 SW Columbia, Suite 900
Portland, OR 97201-5814
Tel: 503.222.7200
Fax: 503.222.4292



Karen Turner
May 23, 2001
Page 2

- **Group Estimate** – Conduct Phase II ESAs on 12 sites during a single mobilization and demobilization by URS and URS subcontractors.

We look forward to your comments and those of the EPA in this Draft Phase II ESA Work Plan. Once we get your comments and the approved access agreements, we will work with you to implement this important project.

Sincerely,
URS CORPORATION

A handwritten signature in black ink, appearing to read "Jeff Wallace".

Jeff Wallace, R.P.G.
Sr. Project Manager

A handwritten signature in black ink, appearing to read "Kim Marcus".

Kim Marcus
Vice President

Enclosures: Priority Ranking Tables
 Cost Estimate Tables
 Work Plan

PRIORITY RANKING TABLES
Phase II Environmental Site Assessment
Coos Bay Brownfield Project
City of Coos Bay, Oregon

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Environmental Cleanup Office

HIGH PRIORITY SITES

Property Name	Recognized Environmental Conditions
Marshfield Corp. 891 N. Front Street	Metal recycling operations (scrapyard) historically conducted on site.
Koontz Machine & Welding, Inc. North 680 N. Front Street	Evidence of past on-site disposal of metal shavings from machining work. The wastes were disposed of beneath the shop on the tidal flat or in Coos Bay.
Koontz Machine & Welding, Inc. South 600 N. Front Street	Property has been occupied by a machine shop for approximately 30 years. Rust staining observed on asphalt pavement adjacent to dumpsters.
Coos Bay Towboat Co. Office / Parking Lot 686 N. Front Street / 690 N. Front Street	Potential metals contamination to soil at the office and parking lot properties exists from on-site disposal of various materials on tidal mudflat and along the shoreline. An adjoining property is listed on state leaking underground storage tank (LUST) database.
Coos Bay Iron Works 896 N. Front Street	Metal shavings from machining work and metal parts and debris were observed on the tidal flat at the rear of the shop building. Contaminated sandblast grit on subject property from adjoining site.
Central Dock Co. 1100 N. Front Street	Possible on-site contamination related to former sandblasting operations on the adjoining property.
Sweet Trucking Co. 820 N. Front Street	Petroleum staining on concrete flooring. Various drums and containers observed in the shop, various debris observed on a rocky shelf beneath the property. An adjoining property is listed on state LUST database.

MEDIUM PRIORITY SITES

Property Name	Recognized Environmental Conditions
Powers Building 737 N. Front Street	An underground storage tank (UST) was decommissioned at the property. Soil and groundwater have not been tested.
City of Coos Bay Pump Station 690 N. Front Street	A UST was decommissioned at the property. Soil or groundwater samples were not collected during decommissioning. An adjoining property is listed on state LUST database.
Marshfield Bargain House 790 N. Bayshore Drive	Stained soil observed near drums of waste oil. A scrapyard adjoins the property to the east and another adjoining property is listed on state LUST database.

LOW PRIORITY SITES

Property Name	Recognized Environmental Conditions
(b) (6) 925 N. Front Street	A drywell was observed on the property, and dry wells are recognized as a common source of subsurface contamination.
Sause Bros. Ocean Towing 310 N. Front Street	Equipment maintenance and repair conducted in warehouse indicates potential for soil and groundwater contamination.

COST ESTIMATE SUMMARY (REVISED)

Phase II Environmental Site Assessment

Coos Bay Brownfield Project

City of Coos Bay, Oregon

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Environmental Cleanup Officer

Individual Estimates¹	
Site	Cost
Marshfield Corp	\$12,000
Koontz North	\$8,000
Koontz South	\$11,000
Towboat Co	\$9,500
Iron Works	\$7,500
Central Dock	\$9,000
Sweet Trucking Co	\$8,500
Powers Building	\$7,500
Pump Station	\$7,500
Marshfield Bargain House	\$8,500
Georgen	\$7,500
Sause Bros	\$8,500
Analytical Contingency Budget ³	\$5,000
TOTAL : \$110,000	

Group Estimate²	
Site	Cost
Marshfield Corp	\$8,000
Koontz North	\$5,000
Koontz South	\$7,000
Towboat Co	\$6,500
Iron Works	\$5,500
Central Dock	\$7,000
Sweet Trucking Co	\$5,500
Powers Building	\$4,500
Pump Station	\$4,500
Marshfield Bargain House	\$5,500
Georgen	\$4,500
Sause Bros	\$5,500
Analytical Contingency Budget ³	\$5,000
TOTAL : \$74,000	

¹Cost estimate assumes a separate mobilization and demobilization by URS and URS subcontractors for each individual property.

²Cost estimate assumes work would be conducted during one work period with one mobilization and demobilization by URS and URS subcontractors for all twelve sites.

³As indicated in the Work Plan, if petroleum hydrocarbons are detected by the NWTPH-HCID screening analysis, additional quantitative analyses may be warranted. This budgetary line item is intended to cover this possibility.